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CONTENTS.

Physiology of the Kidney. Chas. C. Haskell, M. D., Richmond, Va. 677
Diagnosis (Laboratory and Clinical) of Diseases of the Kidney. F. C. Rinker, B. A., M. D., F. A. C. P., Norfolk, Va. 680
Medical Aspects of Diseases of the Kidneys. Philip S. Smith, M. D., F. A. C. P., Abingdon, Va. 681
Surgical Aspect of Diseases of the Kidney. J. M. Robinson, M. D., Danville, Va. 685
The Policy of the State Board of Health in Regard to Tuberculosis. Ennion G. Williams, M. D., Richmond, Va. 691
Caesarean Section. J. Hunter Peak, M. D., Louisville, Ky. 696
Oral Sepsis From the Standpoint of Internal Medicine. Thomas P. Sprunt, M. D., Baltimore, Md. 701
Ringworm Infection of the Glabrous Skin. Lee McCarthy, M. D., Washington, D. C. 706
A Study of the Action of Therapy in Neuro-Treponematosis. T. Latane Driscoll, Ph.D., M. D., Richmond, Va. 710
The Care and Repair of the Cervix and Perineum in Confinement Cases. Robert P. Kelly, M. D., F. A. C. S., Lynchburg, Va. 713
Sinus Disease—Its Relation to General or Systemic Conditions. William Lawrence Gatewood, M. D., F. A. C. S., New York City 718
The Diagnosis and Treatment of Toxic Goiter. Carrington Williams, M. D., F. A. C. S., Richmond, Va. 719
The Diagnosis and Treatment of Conditions Commonly Seen in the Throat. Mortimer H. Williams, M. D., Roanoke, Va. 723
Sympathetic Iridocyclitis not a Myth. V. K. Hart, M. D., Statesville, N. C. 726
MISCELLANEOUS 727
BIBLIOTHECA OBSTETRICA 733
PROCEEDINGS OF SOCIETIES 734
WOMAN'S AUXILIARY, MEDICAL SOCIETY IN VIRGINIA 735
THE TRUTH ABOUT MEDICINE 738
BOOK ANNOUNCEMENTS 739
EDITORIAL 740
NEWS NOTES 741
OBITUARY 748

INDEX OF ADVERTISERS—Advertising Page 5.

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PHYSIOLOGY OF THE KIDNEY.*

By CHAS. C. HASKELL, M. D., Richmond, Va.

We may well marvel at the ability of the kidneys to eliminate substances, often of a toxic nature, over long periods of time without suffering serious damage. No less remarkable is the adaptability of these organs,—how quickly they respond to the slightest tendency towards alteration in the hydrogen ion concentration of the blood plasma by a corresponding change in the reaction of the fluid which they excrete. They are far more than passive filters, as is evidenced by the power they possess to retain a crystalloid substance, glucose, and, simultaneously, allow the escape of another crystalloid, sodium chloride. It has been said that their activity is conditioned by alterations in the composition of the blood; if this is true, the alterations are often so slight as to prevent detection. Thus, sodium chloride is present in "normal" urine in considerable amount; in salt starvation, with no appreciable change in the chloride content of the plasma, this salt practically disappears from the urine. In view of the obvious complexity in the function of these organs, it is easy to understand the "difficulty of designing experiments upon the kidney, of which the results shall be unambiguous and crucial;" and we are prepared for the fact that, nearly a century after the formulation of the first clearly expressed theory to explain renal function, conflicting views are held by the leading investigators, and ignorance is frankly confessed regarding the intimate nature of the processes involved. Nevertheless, advances have been made, and, especially from studies carried out within the last few years, there is reason to believe that the outlook for final solution of the problem is far from discouraging.

In 1842, Bowman described the microscopic appearance of the glomerulus and tubule. From his morphological studies, he ascribed to the tubular epithelium the function of forming urine by a process of secretion, similar to that occurring in various other glandular organs. He suggests, with some vagueness, that through the glomerular vessels water escapes, presumably, by filtration. Two years later, Ludwig suggested clearly that filtration of a complete urine through the capsular epithelium takes place, and that, by the known physico-chemical laws, this filtrate is concentrated in its passage down the tubules.

It was not until 1874 that the problem was attacked by experimental methods. In this year, Heidenhain reported that indigo-carmine, injected into the circulation, appeared to be secreted by the cells of the tubules. From his observations, he concluded that both glomerular and tubular epithelium actively secrete.

In the half century following Heidenhain's report, numerous papers dealing with renal function appeared, some authors supporting one, and some the other view as to the processes involved. In 1917, Cushny proposed the so-called "modern" theory. According to this theory, the glomeruli form a protein-free filtrate from the blood plasma; this filtrate, in its passage down the tubules, assumes the characteristics of bladder urine through "selective absorption" manifested by the tubular epithelium.

For convenience, the views regarding the nature of glomerular function may first be discussed in detail. From the structure of a renal glomerulus, it is obvious that the arrangement is well suited for filtration. A relatively large afferent vessel breaks up into a number of branches, from which the blood is conducted by a narrower efferent channel. The capillary tuft lies within the expanded end of the tubule, separated from the lumen of the latter by a single delicate layer of cells. The *filtration pressure* is the difference between intracapillary and intratubular pressure; consequently, an increase of the pressure in the capillaries or a fall of that in the tubules should increase the amount of filtration. The early experiments of Goll appeared to offer support

*Read as part of the symposium on Diseases of the Kidney, at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

to the view that the glomerular function was filtration; various procedures which raised arterial blood pressure caused an increased formation of urine. Against this, it was argued that there occurred not only an increase of intracapillary pressure but also of rate of flow through these vessels when the general arterial pressure was elevated; consequently, the heightened urine formation might result merely from more active secretion because of the larger blood supply.

Increased intracapillary pressure may be brought about not only by raising arterial pressure but also by retarding the flow through the efferent vessel. When the renal vein is compressed, with a consequent rise of intracapillary pressure, instead of the expected increase in urine formation, there occurs actually a decrease. This seemed to offer evidence against the filtration theory; but it has been explained satisfactorily in harmony with this theory. In the first place, complete occlusion of the renal vein leads to such an engorgement of the kidneys that the tubules are compressed, thus preventing the flow of fluid through them. Retardation of the flow of blood through the capillaries allows of a more complete filtering off of the fluid of the blood plasma; consequently, the non-filterable colloids become much concentrated. It has been demonstrated that these colloids are capable of exerting osmotic tension; under the conditions present in the glomerulus, this osmotic tension opposes filtration; consequently, the rising concentration of the colloids offers an adequate explanation for the diminished urine formation.

Occlusion of the renal artery leads to a prompt cessation in the production of urine: on re-establishing the blood flow, it has been stated, the kidneys do not immediately start functioning and the amount of urine may be permanently decreased. If the glomerular function is one of filtration merely, it has been argued, deprivation of blood, injuring the cells, should render them more permeable, and, consequently, should increase the amount of urine. The accuracy of the observation has been questioned; even if it does occur as claimed, it must be remembered that glomerular filtration, normally through living cells, is an entirely different process from the passage of fluid through a dead membrane, and injury to the cells may interfere just as well with filtration as with secretion.

In 1914, Richards and Drinker devised an apparatus by means of which it is possible to pump blood through the kidney of an experimental animal at a constant rate, regardless of changes in pressure. Employing this apparatus, it was subseqeuently shown that increase in pressure, with no increase in the rate of blood flow, sufficed to cause an increased amount of urine,—this evidence finally settling the much-discussed question and constituting an argument in favor of the view that the glomerular function is one of filtration.

Two arguments against the view that filtration occurs through the capsule have not been answered satsifactorily as yet. First, a rise of intratubular pressure should oppose filtration and lessen the amount of urine; on the contrary, it is found that, within limits, increasing intratubular pressure leads to an increased rate of urine formation. Cushny suggests that this is due to a reflex involving the vessels; evidence in support of this is wanting. Secondly, in testing blood plasma and capsular fluid obtained at the same time, Richards and his collaborators find that the latter may have a higher chloride content than the former. These latter observations do not convince Richards that secretion takes place through the capsule, but they "show the necessity of a further scrupulous investigation of the fashion in which a physical process may be modified when it takes place through the living walls of tubes of capillary size."

A vast amount of experimentation has been carried on in the attempt to determine the nature of tubular activities. Much of the early work may be discarded because of obvious technical errors or unjustified inferences. Thus, the mere presence of indigocarmine in the lumen and cells of the tubules may indicate absorption taking place or it may arise just as well from the escape of the dye out of the vessels into the tubular epithelium and subsequent secretion by these cells. The presence of urates, chlorides, or other salts in higher concentration in the tubules may indicate either secretion of these substances or absorption of water and other urinary constituents. Of more significance are the observations of Hirokawa, showing that the osmotic pressure of the renal cortex is remarkably constant and appreciably lower than that of the medulla, and of Nishi, in which it was found that in aglycosuric animals, sugar was absent from the medulla but present in the cortex.

In the past few years, definite proof has been secured that absorption occurs in the tubules. Wearn and Richards succeeded in obtaining sufficient glomerular fluid for chemical analysis; they found that it contained both sugar and chlorides at a time when the bladder urine was free of these substances. These experiments have been confirmed by White and Schmitt, and there now remains no question as to the ability of the tubular cells to abstract both chlorides and sugar from the glomerular fluid. That absorption is the sole function of the tubular cells is not by any means clear.

Marshall and his associates have demonstrated conclusively that after the intravenous injection of certain dyes, they appear in higher concentration in the tubular epithelium than elsewhere, and they offer arguments of practically a convincing nature in support of the view that their presence is due to abstraction from the blood by the tubular cells and not to absorption from the lumen. Accepting the evidence of Nash and Benedict as to the formation of ammonia by the kidney, we are compelled to explain the elimination of this substance in the urine as the result of secretory activity. While the dyes must be looked upon as foreign substances, ammonia is a normal urinary constituent, and its presence in the urine considered as evidence of a normal secretory process occurring somewhere in the kidney. It is difficult to escape the conclusion, therefore, that the tubular cells possess the power of secreting certain substances just as they are able to absorb others.

Accepting, with reservations, the view that the glomeruli form a protein-free filtrate from the blood plasma and that this fluid is altered in its passage down the tubules by the peculiar activities of the lining cells, the question still remains as to what influences are responsible for the quantitative changes in renal activity. Obviously, increase in either the rate of flow or in pressure of the blood in the glomerular capillaries should increase the amount of glomerular filtration. In a series of beautiful experiments, Richards and his associates have observed changes in intraglomerular pressure that may occur entirely independently of systemic alterations in blood-pressure and they have shown that many of the commonly used diuretics owe their influence to the ability to effect either an increase in the rate of flow through the capillaries or of the pressure within these vessels.

Most instructive were the observations on variations in the number of active glomeruli, as observed in the living kidney of the frog. During comparatively short periods of time, the vessels within a given tuft contracted, causing a disappearance of the glomerulus; while in another portion of the field, establishment of blood flow through previously contracted capillaries rendered visible and indicated beginning activity of another glomerulus. The addition of epinephrin in appropriate concentrations to the blood of the renal artery led to an enormous increase in the number of active glomeruli, which is explained by a relatively greater constrictor action of this drug on the efferent vessels than on the afferent. Caffeine, likewise, increased the number of active glomeruli, because of the power of this drug to cause greater relaxation of the afferent than of the efferent vessels. In short, through reference to alterations in capillary flow or pressure, Richards sees an adequate explanation for the quantitative changes in urine formation, either as occurring in nature or from the influence of diuretics. It is interesting to note that he finds in the hormone from the suprarenal glands an effective governor of renal activity; through it, urine formation may be increased or decreased, according to the effective concentration in the renal artery. On the other hand, Starling suggests that the hypophysis furnishes a chemical regulator of renal activity, as indicated in the well known influence of pituitary extract in relieving the polyuria of diabetes inspidus and also by certain experiments, in which he showed that the addition of pituitary extract to perfusion fluid passing through an excised kidney not only reduced the amount of urine formed but markedly increased the chloride content of this fluid. He is led to suggest that "the kidney is not an isolated organ, guided in its activity merely by the nervous system . . . and by the composition of the blood, but that it is played upon by chemical messengers . . . which reach it from different parts of the body . . . One of these hormones . . . would appear to be formed normally in the posterior lobe of the pituitary; but it is possible that other hormones, at present unknown, also act upon the kidney and determine the degree to which absorption and secretion of the different constituents of the urine are carried out by the several parts of the tubules."

DIAGNOSIS (LABORATORY AND CLINICAL) OF DISEASES OF THE KIDNEY.*

By F. C. RINKER, B. A., M. D., F. A. C. P., Norfolk, Va.

The kidney is subject to disease through the effects of remote and local foci of infections and through the results of constitutional disease and abuse.

Diseases which may affect one or both kidneys are numerous but the ones most frequently met with in medicine and surgery are:

1. Congenital deformities.
2. The nephritides.
3. The infections—(pyogenic or tubercular).
4. Tumors.
5. Calcareous deposits.
6. Cystic degeneration.
7. Circulatory disturbances.

In order to differentiate the various diseases of the kidney, and to diagnose a condition as renal rather than as some other of the maladies so frequently confused with kidney disease, it is necessary to utilize various methods of examination, for no one method will suffice. In studying kidney conditions it should be our aim, not merely to detect the disease as being renal, but we should attempt to find out the exact anatomical or physiological defect, and whether or not it is progressive.

In this section of the symposium, I shall attempt to outline the methods most commonly used in the diagnosis of kidney diseases, and to correlate the deductions to be drawn therefrom.

As in all conditions, the *history* of the case is of primary importance. Dyspnoea, edema of the feet, eye-lids or body, headaches (particularly morning headaches), or disturbances of vision, suggest the possibility of nephritis. Pain in the back or flank, referred to the lower abdominal quadrants or genitalia, with or without the presence of blood in the urine, leads to the suspicion of nephro-lithiasis or pyelo-nephrosis. Painless hematuria suggests tuberculosis, tumor or spontaneous rupture of a renal blood vessel. The latter is not infrequently met with and has been termed renal apoplexy.

Physical examination aids greatly in the diagnosis of renal disease. The kidney may be palpated and found to be enlarged and tender, suggesting infections, tumor or stone. It may be freely movable, resulting in ptosis and causing ureteral kinks when the patient has endured physical strain while in the upright position. The breath may be uriniferous in odor and there may be associated with it orthopnoea, edema of the extremities, increase in blood pressure and the presence of exudate or hemorrhages in the retinal field, leading to the probable diagnosis of nephritis.

The urinary findings are of particular importance in two ways: first, in determining the presence of inflammatory or degenerative disease; and, second, to indicate the ability of the kidneys to perform their duties. The latter is a quantitative study and requires information as to the intake of foods, fluids and dyes.

In considering the urine, the presence or absence of albumin is possibly the most valuable determination to be arrived at. It may, however, be misleading. Albumin is usually present in nephritis. It is also present in conditions in which pus or blood is being excreted from the kidneys or bladder. On the other hand, albumin in the urine does not always spell pathology. Too frequently cases have been labeled "chronic nephritis" when they are orthostatic or postural albuminurias so often met with in young adults.

The finding of albumin in the urine, then, means nephritis, if the case is not excreting pus or blood, and if there are other signs and symptoms which prove it not to be orthostatic.

The microscopical examination of urinary sediment will reveal the presence or absence of casts, as found in nephritis; of blood, as found with stone, tumors, tuberculosis and renal apoplexy; and of pus which is found in cases of abscess or pyelitis.

We come now to the studies indicating the ability of the kidneys to perform their normal duties. This is known as *renal function*. The renal function tests are of value not alone with respect to diagnosis, but also for the study of renal efficiency of that portion of tissue which has remained untouched by disease, and also for the study of the ability of one kidney to care for the needs of the body should it be necessary to remove the other kidney.

Many tests have been suggested for the study of renal function, but only a few have stood the test of time and experimentation. Those

*Read as part of the symposium on Diseases of the Kidney at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

most widely used are: (1) the quantitative study of solids excreted, having knowledge of the amount of food ingested; (2) the study of the ability of one or both kidneys to eliminate a dye, injected into the body, in a given length of time; and (3) the two-hour renal test.

A study of the chemistry of the circulating *blood* is of decided value in the diagnosis of real disease. By the determination of urea nitrogen, non-protein nirogen, uric acid, creatin, creatinin, and ammonia in the blood, we are able to estimate the ability of the kidneys to excrete the waste products of metabolism of both food-stuffs and body tissue. These substances are found to be increased in cases of nephritis, renal suppression, tumors and infections of the kidney. This method of study is also of great value in determining the progress or prognosis of renal cases, and in the preparation of kidney and bladder cases for operation.

Roentgen ray examinations of the kidney are of inestimable aid. By this aid, calculi are readily visualized, and by means of pneumoperitoneum the kidney itself is easily outlined on the X-ray plate. Also definite information regarding the size and shape of the renal pelvis may be gained by injecting the pelvis with an opaque substance and making X-ray photographs. This latter method frequently outlines irregular pelves and distorted calices, so frequently found in infections, tuberculosis, tumors and congenital deformities.

Catheterization of the kidneys can be done with the aid of the *cystoscope*. By this means one is able to determine which kidney is hemorrhaging and which may be excreting pus. The renal function of an individual kidney can be obtained by the use of this method after the injection of phenolsulphonephthalein into the body.

Lastly, the *ophthalmoscope* should be included in the armamentarium of those who study diseases of the kidney. The finding of tortuous vessels or of hemorrhages and exudates in the retinal field frequently are among the first signs of an oncoming severe nephritis.

It's good to have money and the things that money can buy; but it's good, too, to check up once in a while and make sure you haven't lost the things that money can't buy.—*George Horace Lorimer.*

MEDICAL ASPECTS OF DISEASES OF THE KIDNEYS.*

By PHILIP S. SMITH, M. D., F. A. C. P., Abingdon, Va.
Geo. Ben Johnston Memorial Clinic.

From the view-point of medical management, kidney diseases are practically limited to nephritis, as other renal lesions are essentially urological or surgical.

In attempting a discussion of this subject, it is difficult to steer a sane course between the extremes of therapeutic nihilism and unwarranted enthusiasm in the advocacy of treatment. Until the factors concerned in the etiology, and a more accurate appreciation of the pathological changes in the kidneys and other related tissues, are known, we shall always feel that our management of nephritics is unsatisfactory. During the past decade the prevailing therapy has been influenced chiefly by the results of renal function tests and blood chemistry. This appears to be a commendable step in the evolution of kidney management; for it has resulted in a more scientific viewpoint and conservative treatment.

A plan of therapy based on the recognized pathological changes has its merits, but it is often impossible to diagnose accurately the type of kidney lesion. For these reasons, it is believed that the simple classification, acute and chronic nephritis, is sufficient for the purposes of this paper.

Acute Nephritis.

This disease more frequently affects the young. The urinary findings and clinical picture may indicate either a primary glomerular (hemorrhagic) or tubular involvement. In either event our attention must be concentrated on the causative condition. As the result of the systematic inspection of school children, eradication of dental, tonsillar and accessory nasal sinus infections, and more general immunization against scarlet fever and diphtheria, it is believed that the incidence of acute nephritis will continue to show a gratifying decrease.

The patient with acute tonsillitis, or the scarlet fever victim thought convalescent, may develop a gross hematuria or edema. Such experiences, in part, may be avoided by urging rest in bed until urinalyses indicate that the kidney integrity is not involved.

*Read as a part of the symposium on Diseases of the Kidneys at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

The prognosis in uncomplicated acute nephritis is good, not only as regards recovery of the patient, but the ultimate repair of the renal lesion. Generally speaking, there is no treatment of this disease apart from the usual hygienic and dietary care of a patient with an acute infection. During the early febrile stage, a diet liquid in character and yet of sufficient caloric value is indicated. With the subsidence of fever and impaired digestion, solid foods of high carbohydrate content are given. If the illness be prolonged, the diet should include increasing amounts of protein to replace nitrogenous tissue waste. Ordinarily fluids can be given in quantities commensurate with the patient's comfort. If much edema occurs, water and other fluids should be curtailed and salt restricted to a minimum.

Drugs have little value in the treatment of acute nephritis, though the milder alkalies and spirits of nitrous ether have their advocates. Daily bowel movements are desirable through the administration of enemata or mild laxatives.

Too much emphasis cannot be placed upon the importance of maintenance of body warmth. Fresh air in the patient's room is important, but care should be taken to prevent chilling of the body surface during the daily bath or other nursing attention.

Uremia at times is seen in the more severe cases; its management will be discussed under chronic nephritis. This complication of acute nephritis, however, offers a better prognosis than when occurring in chronic renal lesions.

Where active focal infections are regarded as an etiological factor, they should be removed after the patient is convalescent from the acute illness. Exceptions to this statement are noted when recognizable abscesses develop; the suppurative middle ear, peritonsillar abscess, and other conditions attended by confined pus, should be excised and drained promptly.

A varying percentage of cases of acute nephritis improve only to reach a point where convalescence is retarded or marked by exacerbations of the inflammatory process. They usually merge into the type described as subacute parenchymatous nephritis in which the prognosis as regards complete recovery becomes doubtful. In this type the mistake is frequently made in not providing sufficient food, including proteins, to maintain the patient's nutrition and nitrogen balance. Since anemia is an outstanding feature in these patients, tonics containing iron and arsenic are prescribed.

The management of the kidney complications of late pregnancy is not unlike that of acute nephritis. We have been impressed with the beneficial effects of magnesium sulphate intravenously in patients with threatened or existing eclampsia. Venesection is also helpful temporarily when the vascular tension is high. Those with pronounced symptoms of brain irritation may be quieted by a lumbar puncture. Unless there has been a pre-existing nephritis, the situation is saved in most of these patients by conservative delivery. The value of preventive measures in pregnant women is now generally recognized. Two lives at one and the same time are jeopardized by neglect, especially in the late weeks of pregnancy.

Chronic Nephritis.

This phase of the subject is more difficult than the preceding. Most of us prefer to treat the patient with acute nephritis. We follow with enthusiasm the clinical and laboratory investigations of the chronic nephritic; once the diagnosis is established, almost unconsciously our ardor lessens as we contemplate the possibilities of therapy. The lack of some agent that will influence the renal disorder as insulin does the patient's metabolism in diabetes, or liver-feeding the unknown cause of pernicious anemia, is keenly felt. But confronted with a disease almost inevitable in advancing years, and an incidence apparently increasing in those of earlier life, the medical profession is challenged to renewed interest and effort.

A review of recent literature dealing with chronic nephritis, and especially its treatment, is illuminating in the theories advanced and equally confusing in the lack of uniformity in approach and conclusions. Rarely is the pathology limited to one particular part of the kidney structure. Until some more satisfactory and inclusive classification of chronic renal disorders is accepted, we must continue to consider the kidney as participating in pathologic changes which are ofttimes equally as marked in other tissues and organs. Such a concept permits us to refer to the patient as one with chronic nephritis and arterio-

sclerosis, myocarditis, or hypertension; another with chronic nephritis and nitrogen, or salt and fluid, retention. Thus our therapy will be directed to the patient's generally disordered physiology in which the kidney function is an important factor.

Here, again, management should begin with prevention and early recognition. It is interesting to speculate regarding the possible relationship between the high incidence of chronic nephritis in this country and our intensive habits of working and living. If the American people ever cultivate the practice of physical and mental relaxation, with longer and more frequent vacations, it is believed that these degenerative lesions will be deferred until a later period of life.

The rapidly increasing number of applicants for life insurance and those seeking periodic physical examinations have been instrumental in detecting incipient cases which frequently can be controlled by altered habits of diet and work, or by eradication of focal infections.

Some further general therapeutic considerations applicable to most types of chronic nephritis can be stated briefly.

Many nephritics are the victims of obesity and over-eating. In such cases reduction in the quantity and caloric value of their food is advisable. Sansum advocates a "basic diet" in chronic nephritis with or without hypertension; with the urine thus rendered neutral or alkaline, he reports improvement of symptoms and a reduction of blood pressure.

When vascular sclerosis, hypertension and cardiac disability are complicating factors, rest in bed over the week-ends enables many nephritics to carry on their activities.

Focal infections are generally regarded as contributing causes of chronic nephritis. Where no definite contra-indications exist they should be eradicated, though the results to be expected are palliative rather than curative.

Much experimental and clinical work has been done to prove that chronic renal changes frequently result from intestinal stasis. Admitting that convincing evidence is lacking, constipation should be controlled, preferably by hygienic measures.

SPECIAL PHASES OF CHRONIC NEPHRITIS.

Arterial Hypertension: This is especially a complication of interstitial nephritis. In moderate degree, like cardiac hypertrophy, it may be regarded as a compensatory phenomenon. Where the vascular tension is excessive, the subcutaneous injections of guanidine-free liver extract may even yet prove of real value. Our experience with this agent is as yet too limited to make possible definite conclusions, though gratifying reduction of blood pressure and a corresponding relief of symptoms have been observed.

Nitroglycerin and the nitrites are usually helpful when really indicated by a dangerous degree of tension. In threatened or actual cardiac decompensation digitalis is the drug of choice.

Blood Nitrogen Retention: The practice in former years of restricting protein food to a minimum in every case of chronic nephritis is a heritage that should be abandoned since blood chemistry has become available. Many patients, as the result of such advice, suffered from insufficient protein allowance to maintain their nitrogen balance. Deprived of an adequate food intake, the metabolic processes call upon the body tissues to supply the necessary protein requirements. In patients with edema, diuresis and disappearance of edema may be observed following a more liberal protein diet. In others with marked long-standing albuminuria and blood plasma protein loss in the urine, the deficit can be restored only by an adequate protein allowance (nephrosis of Epstein). Unless the blood non-protein nitrogen or urea be increased, three-fourths gram of proteins per kilogram of the patient's body weight can safely be tried. In the event that subsequent blood determinations indicate increasing nitrogen retention, the protein allowance should be reduced.

Edema: Complicating either subacute or chronic nephritis, edema suggests a poor ultimate prognosis. If of slight degree it requires no special treatment. Excessive accumulations of fluid in the body tissues and cavities demand remedial efforts. The dropsy may be partly of cardiac origin, when the value of digitalis should not be overlooked.

The inability of the kidneys to eliminate water adequately necessitates limiting the patient's fluid intake. For a few days 800 c.c. can be given in twenty-four hours; if the edema disappears, increasing amounts up to 1500 c.c. may be permitted. Cushny states that an average of 100 liters of plasma filter through the normal glomeruli in twenty-four

hours and approximately 98.5 liters of this amount are re-absorbed by the tubules. If his estimate be correct, it is difficult to understand how a difference of a few hundred cubic centimeters of fluid intake can influence materially the patient's edema. Yet, clinical results following fluid restriction in this type of patient are ofttimes striking.

Sweating and catharsis are valuable aids in fluid elimination, but neither should be sufficiently vigorous to weaken the patient. Accumulations of fluid in the abdominal and pleural cavities should be removed by paracentesis if the patient's respiration and circulation are much embarrassed. Marked subcutaneous edema may require drainage by multiple incisions.

With water-logged tissues there is usually a corresponding retention of sodium chloride. Whether it is the sodium element alone, as some claim, or its combination with chlorine, with which the kidneys cannot cope, a salt-free diet is important in combating edema.

Most of the drugs listed as diuretics have little value in the treatment of chronic nephritis. Some cause sufficient kidney irritation to defeat the object for which they are administered. However, in edematous patients the effort should be made to increase the renal output in every reasonable way. For this purpose such drugs as theobromin-sodium-salicylate, caffeine and theocin are employed. Beginning with small doses, careful observation should be made of the fluid intake, urinary output, and the patient's weight to determine the effects of the drug. If diuresis results, it may be continued; otherwise, it should be stopped promptly.

Much work has been done recently in the treatment of edema with the salts of calcium in doses of 10 to 18 grams daily. The results have not been uniformly good, but cases with striking diuresis have been reported by Rockwood and Barrier. Keith and Barrier have since published gratifying results with ammonium chloride and novasurol in conjunction with a weighed, salt-poor nephritic diet. Diuresis and excretion of sodium chloride did not occur in some of their cases given ammonium chloride until novasurol 10% solution was administered intramuscularly or intravenously in doses of 0.5 to 2.5 c.c. In a personal communication, Dr. Bannick, of the same clinic, writes that during the past year ammonium nitrate in doses of six grams daily has been used more frequently than ammonium chloride, as the latter drug is not as well tolerated and occasionally has induced clinical acidosis.

Andison states that novasurol and ammonium chloride are of even more value in cardiac edema and hepatic cirrhosis with ascites. In patients with nephritic edema and nitrogen retention the drugs are more likely to cause acidosis. Novasurol occasionally produces a diarrhœa, so purgatives should be given with caution at the same time.

Uremia: This complication of nephritis is usually a dramatic close of the patient's renal endurance. Confronted with it, the physician is conscious of the futility of treatment in the majority of cases. The exceptional recoveries, however, justify considerate and intensive therapeutic effort.

Elimination is the basis of treatment. Venesection with withdrawal of 400 to 800 c.c. of blood, followed by a blood transfusion if the patient is anemic, is ofttimes helpful. A 10 per cent glucose solution intravenously furnishes a readily available carbohydrate and has diuretic properties. A hypertonic salt solution has been shown to relieve brain edema and may accomplish the purpose of a lumbar puncture. Catharsis and sweating with hot baths or packs are indicated as a means of ridding the patient of toxic products.

Repeated convulsions, otherwise uncontrollable, may require morphia or the inhalation of chloroform, though both of these agents are regarded as contributing to renal insufficiency.

In thus reviewing cursorily the medical management of nephritis no effort has been made to cover the available and voluminous literature dealing with the subject. Rather is it hoped that conservatism in treatment, based on recognizable clinical and laboratory data in each particular case, has been emphasized. "Enthusiasm for the new is not infrequently permitted to obscure the merits of that which has preceded it." While our results are often most discouraging, the recently acquired knowledge of the physiologic and pathologic back-ground of nephritis has been helpful in eliminating much unnecessary treatment and prolonging the useful working period of many victims of inflammatory and degenerative renal disorders.

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SURGICAL ASPECT OF DISEASES OF THE KIDNEY.*

By J. M. ROBINSON, M. D., Danville, Va.

It is eminently impossible to cover in one paper of reasonable length all the conditions of the kidney which may be included under the above caption as it is equally as impossible to treat the kidney from a surgical standpoint without encroaching upon other fields—pathology and physiology forming the ground work, consideration of which is as necessary as the foundation of a house is to the superstructure.

The advance in surgery of the genito-urinary system, which has been rapid and sound in the past decade, has been due not so much to the improvement in the technic of operating as in the painstaking care in arriving at a correct diagnosis and in an estimation of the ability of the patient himself to withstand the shock which is peculiarly present in this type of case. This, coupled with our recognition of the vital necessity of a preparation of the patient both from a mental and physical standpoint to a point of maximum resistance, which one can not describe but which is recognized through experience alone, has brought genito-urinary surgery well abreast of the operative field.

I can not stress too strongly at this point one form of preparation which, too often neglected, has impressed me more and more with each succeeding year until now consideration of the mental attitude of the patient occupies a most prominent place in our pre-operative school. As this is a hobby with me I will not linger on it here but merely mention it in passing "lest we forget".

The anatomical structure of the kidney, the physiology involved, and the function it is called upon to subserve, make us wonder why this organ is not diseased more frequently than it is.

*Read as part of the symposium on Diseases of the Kidney at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

Let us now consider the surgical aspect of the kidney or, to be more specific, those conditions of the kidney for which surgical measures are necessary to secure their amelioration or relief.

A brief resumé of the anatomical position of the kidneys with their relationship to important contiguous structures, solely to refresh the memory of some of us who may have become a little rusty, I hope will not be amiss.

The kidneys are both extra-peritoneal, lying behind the peritoneum which covers their anterior surfaces only; they are located in the upper back part of the abdomen, one on either side of the vertebral column with the upper pole opposite the twelfth dorsal and extending down to the third lumbar vertebra.

They are covered with a thin fibrous capsule which is closely adherent to the organ and surrounded by a bed of loose fat and connective tissue. Important points to remember are that the descending duodenum lies immediately in front of the right kidney and can be easily caught in the pedicle clamp if care is not exercised in its application and that the diaphragm and pleura lie between the posterior upper surface of the kidney and the eleventh and twelfth ribs, the upper half of the kidney being normally above the twelfth rib. The right kidney as you know occupies a position one inch lower than the left, due to the presence of the liver, it is therefore more accessible than the left, more frequently out of its bed as well as being more often the object of operative measures.

It can readily be seen from this that the kidneys can not be called easily accessible organs and especially is this so in subjects who are heavily muscled, have an over-abundance of fat, or who have a narrow costo-iliac space.

There are two methods of approach to the kidney—one the lumbar route with its many varieties of incisions, and the other the abdominal route, either trans- or extra-peritoneal. And here again the necessity for an accurate diagnosis is most important in order that the route best suited for the case may be employed. In the great majority of cases the lumbar route is used as there is a comparatively small percentage of surgical kidneys which can not be handled through this incision. Before making the incision, four landmarks should be located, namely, the tip of the twelfth rib, the border of the erector spinae muscle, the crest of the ilium and the

anterior superior spine. The incision should begin just back of the tip of the twelfth rib, carried downward almost parallel with the erector spinae muscle, then forward parallel with and one inch from the crest of the ilium, and as far forward as necessary, the length depending upon the thickness of the abdominal wall and the extent of the operation. This also allows the upper part of the ureter to be brought under inspection where it can be examined and treated as the condition demands. I will not go into a detailed description of the operation as you are doubtless thoroughly familiar with the procedure.

In the abdominal operation the incision is made about one-half to one inch from the median line and extends from the costal border to within two or three inches of the pubes; a second supplementary incision may be used here, beginning about two inches from the upper end of the longitudinal incision and passing transversely outward at right angles just beneath the costal margin for a distance of four or five inches. This T-shaped incision is most useful in the presence of large tumors of the kidney and is the incision of choice when malignancy is present or suspected.

To those men who are devoting a greater part of their time and energy to kidney surgery, the following passage from Hinman in his article on Nephrectomy is most appealing: "There is a certain charm about surgery of the kidney. It exercises the imagination, uses the intellect, requires judgment, and benefits by skill and experience sufficiently to make it fascinating. Interest is diversified. Problems that often require a high degree of intelligent solution arise throughout the course of almost every case. The problem of diagnosis comes first with its highly technical methods of examination, in the use and proper interpretation of which both training and experience are required. Then arises the problem of preparation for surgery, such as catheter drainage or nephrostomy, and the problem of delay against early operation. Finally the problem of choosing the best surgical attack is a very interesting and vital one . . . The surgeon chooses for the patient the conservative or radical way, and the result in time proves the correctness or error of his judgment. The satisfaction of exact diagnosis and curative treatment is no greater in any other field of surgery".

In reviewing the literature on this subject one can not help but note the enthusiasm which permeates these articles and share with them the feeling that another epoch in surgical history has been made and success has been the just reward for their untiring, intelligent and brilliant efforts.

In approaching the kidney from a surgical standpoint one must, like a good general, plan his campaign, marshal his forces and be prepared to meet any emergency. Before going far in your determination of what to do, I wish especially to call your attention to the necessity of establishing the presence or absence of a second kidney. Statistical reports show that one kidney is congenitally absent in one out of every 2,400 subjects and one surgeon reports this condition found in two out of 500 cases. The presence of a large kidney on one side with no readily assignable cause should be sufficient in itself to arouse suspicion and call for an exploration on the other side.

The removal of a lone kidney has occurred more than once, much to the discomfiture of the surgeon, to say nothing of the "annoyance" to the patient. I feel, however, that the above admonition is unnecessary as it is inconceivable that in this day any surgeon would operate on a kidney without first having the routine functional, cystoscopic, X-ray, and such like tests made. In no one branch of surgery is a thorough knowledge of existing conditions so important as in surgery of the genito-urinary system where the margin of safety is always small and even an apparently trivial error of omission may be sufficient to decide the issue against the patient.

According to Lower, the essential character of the kidney makes the following the outstanding considerations which must be met in considering any surgical procedures upon them:

1. If one organ is impaired, to determine the functional capacity of the other.

2. If both organs are impaired, to determine whether or not the impairment of one is of a sufficiently minor degree to allow it to undertake the whole functional load.

3. If both are impaired, to determine whether or not the impairment of both is so slight that first one and then the other may be repaired.

He further states that no operation on the kidney should be considered a minor opera-

tion. Even pyelotomy for removal of a stone, unless the stone lies with comparative freedom entirely within the pelvis, may be followed by injury of the calices and adjacent kidney tissue to such an extent as to diminish seriously the functional capacity of that kidney.

In the selection of surgical conditions of the kidney for your special consideration, I have been guided in my choice by those in which recent advances in their treatment have brought them prominently to the attention of our profession.

The following subjects I will of necessity handle very briefly, namely: Tumors, polycystic kidney, stones, hydronephrosis, tubercular infections, nephropexy and nephritis.

Tumors: Under this heading we find a large number of malignant growths grouped under the term hypernephroma. Young has very rightly called attention to the fact that due to the uncertainty of their histogenesis these tumors should be more properly called nephroma as no proof has been brought forward to warrant the assumption that they spring from adrenal tissue as the former term would seem to imply. Practically all tumors of the kidney are malignant and should demand nephrectomy. If malignancy is suspected or if the tumor is of considerable size, the abdominal route should be the approach of choice. This is especially so in the former condition in which case it is necessary to secure and ligate the vascular pedicle as early as feasible as it is now known that the renal veins are often involved and should be divided as far from the tumor as possible. In this operation the incision must be free and the exposure wide as your success depends upon a complete removal of the fatty capsule, the glands and perhaps the adrenal. The keynote of success in surgery of malignant conditions is early and radical operation and so it should be here, and yet we see cases in which the first symptom noted by the patient appeared only a few weeks before examination and, nothwithstanding this, we find a mass which is beyond surgical measures; while on the other hand we see cases in which the symptoms had existed over a period of several years that have been operated on and apparently cured.

Polycystic Kidney: Here again the kidney surgeon is called upon to use his wits to the utmost. It is still a debatable question with the concensuus of opinion favoring medical rather than surgical treatment. It is generally agreed that a polycystic kidney should not be removed except in the face of a rapidly growing tumor with free bleeding, infection and suppuration or tuberculosis; and even then you may expect in the too near future a reappearance of the symptoms on the other side, as the disease is in the majority of cases bilateral. Surgical evacuation of the superficial cysts may be justifiable in selected cases.

Stone in the Kidney: The operations for stone in the kidney are pyelolithotomy, nephrolithotomy and nephrectomy. In this condition the operation will depend upon the location, size and shape of the stones, which are usually located in the pelvis or calices, rarely in the cortex. The kidney is exposed through a free lumbar opening and brought into the wound where a thorough examination by palpation may be made of its pelvis, ureter and kidney proper in order to determine if possible the above facts.

If the stone is located in the pelvis and its size is such as to preclude its removal by pyelotomy without doing too great damage to the kidney substance, a nephrotomy should be done. The kidney should be opened by an incision a little behind the convex border in the line of Broedel, or, as it is called by some, in the non-vascular zone of Hyrtl, as it is here that the terminal arteries of the anterior and posterior group intermingle and are smallest in size and fewest in number. The opening should be just large enough to admit an exploring finger which is passed into the pelvis, the stone located and extracted with forceps.

If in addition to the stone infection is present and if the other kidney has been examined and found to be healthy and normal, nephrectomy would be considered conservative surgery. If infection is present and nephrectomy is contra-indicated, the pelvis must be drained. Horsley describes a method for this in order to avoid placing a drain into the pelvis direct which as a rule results in a fistula of long standing. He passes a pair of blunt haemostats through the pelvic opening, pushes them up through the substance of the kidney towards Broedel's line where they are shoved through the cortex; a soft rubber catheter is caught in the bite of the forceps and the tip of the catheter is drawn through into the pelvis of the kidney; it is fixed to the capsule and brought outside, the wound in the pelvis being

closed. According to Eisendrath, quite large stones of the branching type can be removed by an opening into the kidney pelvis even though it may be necessary to extend this into the cortical substance, with much less damage to the kidney than a nephro-lithotomy. As a matter of fact bisecting the kidney should not be the operation of choice but rather the one of necessity.

Hydronephrosiss Hinman's researches a few years back have served to present this subject in an entirely new light. We had been accustomed to think that removal of the obstruction in the ureter was quite sufficient to restore the function of the affected kidney. He has shown, however, that in a large percentage of these cases the opposite kidney has undergone hypertrophy and has taken over practically the entire load and, even though the obstruction is corrected, the kidney does not resume its function except in a minor degree and remains as a large sac which, if infection is present, will in time endanger the good kidney. It would seem, therefore, that nephrectomy would be the safest procedure here.

According to Lower in his article on "Surgery of the Kidney," from which I have already quoted at some length, the dangers of nephrotomy when one kidney is functioning properly are such as to question the justification for this operation. These dangers he states are as follows: Persistent hemorrhage, failure of the wound to close with the consequent leaving of a constantly infected urinary fistula, permanent damage to the kidney structure by contracting scar tissue, diminished resistance of the kidney operated upon, the increased danger of the recurrence of pathological conditions whether stone, infection or tumor, and finally, the inevitable effect of a prolonged suppuration of one kidney upon its fellow.

Young's conclusions are that whenever the opposite kidney is normal and the hydronephrosis is of considerable size a nephrectomy is indicated. If the hydronephrosis is early and uninfected, a plastic should be done when possible. If the opposite kidney is damaged or absent, a plastic should be done before resorting to a nephrostomy. In the plastic operation he favors the simple uretero-pyeloplasty and cites four recent cases in three of which the results were perfect. This operation is described in detail in his "Practice of Urology".

Tubercular Infection of the Kidney: Tuberculosis may develop in any portion of the kidney and as a rule this organ is the one first affected in the genito-urinary system. In the beginning it is nearly always unilateral and may remain so for months before appearing in the opposite kidney.

The diagnosis of renal tuberculosis having been made, what then? A review of the literature on this subject shows a remarkable unanimity of opinion ranging from nephrectomy, provided only one kidney is infected, to removal of the worst kidney even though there is a marked involvement of the other. The answer will probably be found between these extremes.

Israel asserts that there is no non-operative cure for renal tuberculosis and Wildbolz that it is a disease that is rarely healed spontaneously. It is true that some patients may live on in comparative comfort for ten or fifteen years or more but this is probably explained by the fact that the infection is well localized and of low virulence or, as Braasch states, may have developed an immunity from a multiplicity of lesions. Any procedure short of primary nephrectomy will afford at best only temporary relief.

In 611 cases in the Mayo Clinic in which a complete follow-up was obtained after nephrectomy, 59 per cent were apparently cured after an average of four years, 31 per vent were dead from all causes, and in 10 per cent there was still evidence of some tuberculosis in the genito-urinary tract.

In comparison with this Rafin states that ninety-one out of 168 patients not operated on were dead, the majority within the first three years after the onset of symptoms. It is probable that the vast majority of the remaining seventy-seven was suffering the distressing symptoms of tuberculosis of the urinary tract if not actually dying from it.

Early operation in renal tuberculosis when the infection is limited to one kidney or when there is only slight involvement of the second kidney should be attended by a mortality so low as to be practically nil.

Where the ureter is involved, the extent of involvement should be the deciding factor in its removal. A slight enlargement or nodulation in its upper part will be arrested or will

clear up entirely after removal of the kidney and stoppage of the passage of urine over it. As a matter of fact lesions lower down in the ureter and in the bladder show a remarkable tendency to get well after the diseased kidney has been removed.

Young states that "the injection of pure carbolic acid into the ureter is valuable in sterilizing the ureter, destroying its epithelium and promoting an early resorption of inflammatory changes."

Bidgood states that in a review of eighty-nine cases of nephrectomy for tuberculosis, the wound broke down in sixteen after operation. In a further study of these sixteen cases he found that no feature in the pre-operative examination or history was related to this breakdown but that the lesion present in the kidney was of prime importance. He concluded that the cases most likely to break down were those with acute tuberculosis, especially pyonephrosis and those in which tuberculous pus was spilled in the wound. We have all seen cases of a persistent sinus after nephrectomy where non-absorbable ligatures were used on the stump in which it was difficult to determine the cause of the sinus especially when there was a tendency towards tuberculosis.

There is one other point I would like to mention before leaving this very important subject and that is to stress the need of care and gentleness in handling the kidney as to traumatize it is to invite complications such as embolism, infection of the wound and tubercular involvement of distant organs.

Nephropexy: Mention of this operation is not to discuss it at length but merely to say that it should not be performed except in the presence of positive indications for it, such as mobility sufficient to cause the kidney to be damaged, twists or kinks in the ureter, or symptoms indicating undue traction on the pedicle.

The many and varied symptoms, mostly of nervous origin, which have in the past been attributed to movable kidney I believe, with careful investigation, can be placed in their proper category.

Acute and Chronic Nephritis: The surgical handling of these conditions has blossomed forth in many well written and interesting articles but whether or not any real progress has been made is still open to question. I can do no better than to summarize briefly these operations according to Young's classification which is as follows:

Acute Toxic Nephritis: Decapsulation and decapsulation with nephrotomy and drainage have been recommended but beyond a temporary increase in the quantity of urine nothing has been accomplished.

Acute Bacterial Nephritis: In this condition operation is indicated in the unilateral cases. Where there is fever, pyuria, hematuria and localized pain indicating a tense engorged kidney, splitting the capsule will relieve pain and is productive of good results.

Acute Brights: Pousson, in a study of the statistics in 116 cases, states that of twenty-four operated on in the early stages, eight are dead and sixteen living, four of whom showed no improvement. In ninety-two who were operated on three months or more after onset, twenty-five are dead and sixty-seven living. The operations done were decapsulation and nephrotomy.

Chronic Brights: Decapsulation as brought forward by Edabohls in 1898 has not met with the success in this condition which would establish it as an effective operation. In a resumé Young says that decapsulation has been proposed on two bases:

1. To allow new vascular connections with the kidney to form.
2. To relieve internal pressure of the kidney.

The first named object is probably not accomplished and the second can be sought only when a kidney is congested or oedematous.

In properly selected cases, pain is relieved and the flow of urine is increased; as to the ultimate result, however, little can be said.

I regret that time will not allow a more complete exposition of the subjects upon which we have just touched or permit us to go into other phases of kidney problems which are of equal interest and importance, such as the formation of hematogenous abscesses in the kidney secondary to distant foci, nephralgia, extraction of stones through the ureter by recent improved methods, as well as the question of diet and general management in conjunction with surgical treatment. These questions, however, will probably be brought out in the discussion of this symposium and in a much more attractive and forceful manner than can be done by the essayist.

In summing up the question of surgery of the kidney, Bugbee says, "Conservatism in deciding on operation, the proper preparation of the patient for operation, conservation of renal tissue, nephrotomy preliminary to nephrectomy in the presence of serious surgical risk, the free employment of transfusion, and intelligent after-care, will go far toward placing renal surgery in its proper place as one of the most interesting, accurate and satisfactory branches of surgery."

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DISCUSSION OF PAPERS BY DRS. HASKELL, RINKER, SMITH AND ROBINSON.

DR. JOSEPH F. GEISINGER,* *Richmond:*—The Society doubtless realizes without any suggestion from me that it has just heard an admirable symposium upon a subject touching more or less intimately every department of medicine and surgery. I am personally grateful to the essayists for the comprehensive sweep of this symposium and for the soundness of the information it conveys.

It would be interesting to attempt now an equally comprehensive discussion, but the field covered is too vast and the time allotted far too short. The anatomy and physiology of the renal apparatus, for instance, though splendidly exhibited by Dr. Haskell, I am compelled to pass by with the simple remark that we have happily emerged from the era when we were disposed to relegate these fundamentals to the class-room and have now come to realize quite fully that clinical medicine has its roots here and must always display the most intimate regard for them. Much of our knowledge of the manner in which the kidneys accomplish their functions is unfortunately still speculative, but as these processes become better understood it is possible that some of the bedside problems associated with them will likewise become unfolded.

The diagnostic measures at the disposal of the attendant confronted with a renal problem have been outlined in detail by Dr. Rinker and need no further comment. The combination of clinical judgment, laboratory data, roentgenology, and cystoscopy provide us with an armamentarium which in the general average of cases renders diagnosis in this field at least as precise as it is in any other branch of medicine.

The medical aspects of renal disorders, which is the subject of the excellent paper by Dr. Smith, I do not consider myself competent to discuss. It may be permissible, however, to call attention to the possibility of the existence of certain types, or at least one type, of nephritis which is not described in any text and which is yet not uncommonly met under certain circumstances. This type of nephritis is not frank in its expression, is not constant in its manifestations, is not associated with edema or hypertension, exhibits no casts in the urine, but may present a fixed low specific gravity, marked retention of nitrogenous products, possibly gross hematuria, and often a steady downhill progress which nothing seems competent to arrest. I have invited the consideration of my medical colleagues at the Stuart Circle Hospital to this tricky renal situation as well as to the general riddle of uremia to which it often leads.

The surgical aspects of renal disease concern me more particularly and, if time permitted, I should enjoy a more extended exchange of views at this point of the discussion. Fortunately, the soundness of the conclusions expressed by Dr. Robinson leaves no occasion for any elaborate comment. Our experiences at Stuart Circle place us in substantial agreement with everything he has said. We are perhaps somewhat less disposed to consider operation in bilateral renal tuberculosis, which we have come to regard as an out-and-out non-surgical condition unless one kidney, with all its function, is completely destroyed and yet behaving as an active focus. Where nephrectomy is performed in unilateral cases, we prefer complete wound closure without drainage and make no attempt at ureterectomy which, to be efficient, must be complete, and hence is usually impossible or unwise.

The futility of conservatism in the presence of large hydronephrosis, where the total renal function has been assumed by the other side; the removal of polycystic disease from the surgical field, except under most unusual circumstances; the realization of the advantages of the transperitoneal approach to tumors of the kidney, large or small, all appeal to our best judgment. The nephrotomy drainage which he associates with the name of Horsley is an admirable procedure which is usually ignored but which, if more frequently employed in infected calculus kidneys, would unquestionably, I believe, result in a definite reduction of the present depressing incidence of stone recurrence. The caution against the indiscriminate use of nephropexy is timely, but, lest the pendulum swing too far, should be accompanied by a reminder that now and then in a well-selected case this operation becomes one of the most brilliant in surgery. The difficulty lies mainly in the selection. We are at present giving some particular thought to the question of decapsulation in nephritis, concerning the desirability of which the evidence is extremely conflicting and confusing. In the typical nephritis resulting from poisoning with bichloride of mercury we are becoming disposed for certain reasons to believe that the dreary results of decapsulation might perhaps be improved if the operation were performed immediately and not, as usually happens, after several days of other treatment, during which irreparable damage to renal tissue has occurred.

Finally, may I commend especially and most heartily the more general aspects of renal surgery as expressed by Dr. Robinson. He refers to a "hobby" of his own and here touches one of mine, which I have previously discussed in a manner before the Society, but to which, if I may, I shall turn again by way of conclusion of this fragmentary and cursory discussion:

*Editor's Note: The opening of the discussion of the symposium on "Diseases of the Kidney" was assigned by the Program Committee to Dr. Geisinger who was furnished with copies of the papers in advance of the meeting.

1. Renal surgery is but rarely of an emergency character and, except in a very occasional instance, will permit complete pre-operative study by all the means now at the command of the urologist.

2. This preliminary investigation should embrace the supposedly sound side as well as the side under attack, and it should be recognized as a cardinal principle in this field that no major surgery upon one kidney should be undertaken until the integrity of the other organ is soundly established. Unexpected pathology, operative accidents, or extreme technical difficulties may require nephrectomy where some simpler procedure had been planned; or the degree of operative traumatism, where nephrectomy is not done, may cause temporary suppression of function in the kidney involved. The burden of sustaining life in the patient is then thrown upon the opposite organ and its actual existence or its freedom from disease cannot be left to hypothesis.

3. The comprehensive study here pictured will not only disclose the condition of the sound side, the nature of the processes at work in the diseased side, and the most appropriate measures for the relief of these latter, but will also not infrequently suggest preliminary treatment over a longer or shorter period during which period essential changes may occur, making less surgery sufficient, or no surgery necessary, or more surgery possible. The lesson taught by the preliminary phase of prostatic surgery should be applied more consistently to the upper tract and in certain cases, perhaps in many, will be found productive of some astonishing and most gratifying results.

4. The immense value of renal tissue and its amazing recuperative powers should ever be in the forethought of the urologic surgeon, leading him away from the greater radicalism of the past toward the greater conservatism which is steadily growing in the present and will be further emphasized in the future. Certain conditions—unilateral tuberculosis, large hydronephrosis, tumor, calculi of some types, pyonephrosis—demand nephrectomy with no uncertainty. In various other conditions, however, less drastic measures are often efficient and not infrequently surgery may be totally replaced by other methods of attack. One may then enjoy the peculiarly stimulating experience of not only relieving the patient of his disability, but of restoring to him an organ which may at some future date represent to him the difference between life and death. It would be interesting and instructive to illustrate these considerations in some detail but the limits of the present discussion make it necessary to reserve this for some subsequent communication.

5. Approached in this attitude, radical where necessary, constructive and conservative where possible, guided by careful preliminary study, and fortified by equally careful preparatory and post-operative treatment, renal surgery is unsurpassed in any branch of medicine for excellence and permanence of results.

6. The age distinction which separates infancy from maturity in this field is artificial, unreasonable and unjust, and, in closing, one cannot refrain from a final word in behalf of these little sufferers, who are subject to the same disorders as their elders, but who, in spite of their well-known tolerance of cystoscopic manipulations, are still so seldom permitted to have the benefit of the precision of diagnosis and treatment, surgical or otherwise, which is accorded to the adult as a matter of course.

DR. C. C. HASKELL, *Richmond*, closing discussion: There are one or two points that I should like to comment on. The first of these is in connection with the interesting experiments performed by Dr. Richards, of Philadelphia, and the inferences he drew therefrom. He suspected that if the glomerular vessels were to remain contracted for a considerable time, the resulting oxygen deprivation would injure them. He tested this by injecting a solution of epinephrin intravenously into cats, finding that albumin subsequently appeared in the urine; this appearing to offer confirmation of the view that vascular constriction would injure the glomeruli if sufficiently prolonged. Since it has been claimed by some that there is an increased secretion of epinephrin as a result of emotional stress, Dr. Richards next tried the influence of emotions, such as anger or fear, finding that they, likewise, lead to the appearance of albumin in the urine of cats. The inference is that certain cases of nephritis occurring in man may owe their production to unwholesome emotional states, such as worry; the mechanism involved being an over-production of epinephrin and prolonged constriction of the glomerular vessels.

We must recognize that Dr. Smith is not alone in having obtained good results from the intravenous injection of calcium chloride in some cases of nephritis. However, this drug should be used with caution intravenously—with the caution I am sure Dr. Smith always exercises. We are in an era of enthusiasm for intravenous medication, but anyone having an opportunity to observe the effects of the intravenous injection of even hypertonic sodium chloride solution will realize that the procedure is not devoid of danger. Only recently, I had the opportunity to learn of a case where only a portion of the recommended dose of calcium chloride solution injected intravenously into a child resulted in prompt death of the patient. Understand, I am not condemning the use of calcium chloride or intravenous medication in selected cases, but it should always be borne in mind that there is a constant element of danger.

DR. P. S. SMITH, *Abingdon*, closing the discussion: Answering Dr. Haskell, I think probably he misunderstood me in saying that I use calcium salts intravenously in the treatment of nephritis, for I have never done so. We have used calcium chloride intravenously in patients with gall-bladder disease associated with jaundice, preparatory to operation. We have also given magnesium sulphate in the vein in cases of eclampsia with good results. I agree, however, with Dr. Haskell, that any agent employed intravenously should be used with caution.

THE POLICY OF THE STATE BOARD OF HEALTH IN REGARD TO TUBERCULOSIS.*

By ENNION G. WILLIAMS, M. D., Richmond, Va.
State Health Commissioner.

On previous occasions I have addressed our Society on matters that might be regarded as debatable spheres of public health activities, twilight zones. I shall today present for your consideration the subject of tuberculosis and

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the State's duty in regard to the tuberculous so far as it has been regarded by the State Department of Health and by the General Assembly of Virginia.

At the outset I may say that virtually all governments, certainly all States of the Union and provinces of Canada, have considered tuberculosis as a disease which should receive the attention of the public health authorities. With few exceptions, every State has sanatoria for the care and the cure of tuberculosis.

Our first biennial appropriation gave $20,000 for general health work and $20,000 for tuberculosis. Since that time the tuberculosis appropriations have mounted until they reached the peak in 1923-24, a total of $398,648. In that year we received for public health work $194,174. Since that time this discrepancy has lessened and for the current year our tuberculosis appropriations exceed our general health appropriations by about $163,000.

It would seem from these figures that Virginia has tried to deal generously with its tuberculous; and one of the most serious problems which the State Health Department has been forced to consider is—how to spend this money wisely and to the best advantage alike for the victims of tuberculosis and the State as a whole.

Briefly, I shall place before you the steps by which we arrived at our system of charges. This was not the first or most important question for us to solve, but it has much to do with the main thought of this paper.

By appropriating money the State openly recognizes its interest in tuberculosis. It took the ground that there was a distinct benefit to all the people when tuberculosis was arrested and the number of its victims lessened. This policy put tuberculosis in a class separate from all other diseases, although it might be said with equal truth that the elimination or the cure of any ailment adds to the wealth and the happiness of the State.

At the outset we knew that an appropriation of $20,000, or ten times $20,000 would not enable us to look after the tuberculosis patients in Virginia. There were as late as 1915 more than 4,000 deaths from tuberculosis annually in Virginia, and, roughly estimating, this meant that there were more than 40,000 Virginians suffering from tuberculosis. We had, therefore, to use discretion in selecting our patients, and we had to consider what part the State should pay and what part should be paid by the patient.

As a matter of fact, I advocated a fee based upon the ability of the patients to pay; but a majority of the board decided that at Catawba, our first sanatorium, there should be a fixed fee for all patients, one-half the cost to be defrayed by the State and the other half by the patient or the community from which the patient came.

Years later when Blue Ridge Sanatorium was established a graduated scale of charges was tried; the financial condition of the patient was taken into consideration and those able to pay little were charged little. This plan soon was found to be entirely impracticable. The officials of the sanatorium could not possibly decide on the financial status of the patient; and, unfortunately, the word of the patient could not always be taken at face value. It was found to be almost equally impossible to decide fairly upon the information given by acquaintances or friends of the patient. They either were partial or lacked true knowledge of the patient's condition. To have employed investigators to ascertain the financial status of the patients would probably cost as much as it would cost the State to give free care.

I may quote to you an experience which shows the difficulty in determining the financial status of patients. Several years ago the State Department of Health gave free Pasteur treatments to those unable to pay. One day two men, who had been bitten by a mad dog, came to the office for treatment. They had letters from the mayor and the health officer of the city in which they lived, stating that they were unable to pay for treatment. When they were told that they would have to wait until the next day for us to get the material from Washington, they became indignant and went immediately to a private Pasteur Institute where each immediately and without protest paid $75.00 for the treatment.

So, I frankly confess that my original judgment was wrong. The experience of eighteen years has demonstrated that the fixed fee is the more desirable policy; and at the State Sanatoria for white people the costs are split evenly between the State and the patient: while at the sanatorium for colored people, the State pays a slightly higher proportion.

States do not consider indigency. So far as I know, there is nowhere a State poor house

or similar institution. The care of the indigent has always been a matter of local concern. There are county poor houses, or county homes, or county farms; and cities have similar institutions. It will probably be urged by those in favor of the State assuming the charge of indigent tuberculous that there is a difference between the indigent who is not suffering from a communicable disease and the indigent who is apt to be a menace to his neighbors. That is perfectly true; but it will be recalled that the State pays half the cost of maintaining the sanatorium patient and this might fairly be regarded as the measure of the State's interest as compared with private or local interest.

Therefore, the State, through the General Assembly, took the position that where a patient is unable to pay for treatment at a sanatorium, the community in which the patient resides should bear a share of the expense, and so there was passed an act authorizing the cities and counties to appropriate money for the support of patients unable to pay. Some cities and counties now exercise this right and send patients to the tuberculosis sanatoria.

Viewed from an economic standpoint, it is unfortunate that a large majority of tuberculous patients whose expenses are partly borne by communities are generally far advanced cases; and every far advanced case at our sanatoria is necessarily an additional cost in the operation of the institutions. This is, of course, too obvious to need any detailed explanation. You doctors know how much more it costs to care for bed patients than it does to care for those who can attend and do attend regularly the dining room.

Fortunately, our problem today is not as serious as it was in 1908. We have no vital statistics for that year, but I feel safe in saying that there is today in Virginia less than one-half the tuberculosis there was twenty years ago. To give some exact figures, the tuberculosis death total for 1915 was 4,003; the 1926 mortality was 2,673 and, taking into consideration the increased population, this makes a decline of more than 40 per cent in the death rate from tuberculosis. Nevertheless, we may set the figure that we have today at more than 20,000 cases of tuberculosis in Virginia.

Obviously, we can not hospitalize all, even if we were to take only for the briefest period those who require a minimum of instruction. We now have beds for more than six hundred white patients and for about one hundred and fifty Negroes. We believe that we should use these beds, so far as it is humanly possible to use them, for the care of incipient or moderately advanced cases, patients who will stay at the sanatoria for a limited length of time, who will be benefited by the treatment and restored to active life, and who will be able to protect others and to teach other tuberculous patients how to care for themselves and how to protect the community.

Nevertheless, we find ourselves at odds with many people, with many doctors. We find that there are many of our leading doctors who think that the State should take charge of advanced cases. It is an economic problem. Can the State afford to do so?

It is now costing Virginia about $300,000 a year to maintain its sanatoria and about $70,000 a year to maintain tuberculosis clinics. Taking the death total of 1926 as a basis, 2,673, it is safe to say that there are considerably more than 5,000 far advanced cases in Virginia.

We have a method of approximating our tuberculosis data without taking the arbitrary statement that there are ten cases to every death. We maintain a well-equipped, carefully organized clinic service which holds in sparsely settled sections occasional clinics, that is, clinics which have no definite date every year, but are held as frequently as the size of our force will permit. In more thickly settled sections, especially in counties where there are centers of population, we hold periodic clinics, usually four times a year. These are strictly diagnostic clinics. They are case-finding clinics and it has been our experience that not only a considerable amount of unsuspected tuberculosis has been disclosed at these examinations but that a far greater amount of unsuspected and untreated diseases has been disclosed.

While the nominal, and the main object of these clinics is to investigate and determine tuberculosis, still we have found that the advice of our clinician, based on a thorough examination, has resulted in sending to doctors throughout the country innumerable cases which would have developed seriously and which, now under treatment, are on the road to recovery.

We examined last year 8,818 patients. Of these, only 1,824 showed pulmonary tubercu-

losis, but 6,507 showed sickness of some sort or other requiring a doctor's care, yet only 791 were at the time under the care of a physician.

Our clinics are, as I have said, strictly diagnostic; even for tuberculosis we correspond with the physician and not with the patient; and no cure of any sort was recommended to any one of the 6,507 cases of illness, but each case was advised to see his family physician. Our only advice, which in any sense might be regarded as tending to the curative, is that we do advise sanatorium treatment to those who we think would be benefited by that sort of treatment. We do, however, distribute tuberculosis literature, which is available from any source.

Our clinicians are strictly debarred from private practice and they are not permitted to receive a fee when they go into consultation. We do not hold clinics in opposition to the wishes of the local doctors. If we start such a service and we find that there is such opposition, we withdraw; and our nurses are careful always in visiting the local doctors in advance of the clinic and inviting them to the clinic; so, with this record of case findings, we feel safe in saying there are at least 5,000 far advanced cases in Virginia.

Now, it will be seen that this is not a matter simply of maintenance. It will probably cost not less than $1,500 per bed at a well equipped sanatorium. I am inclined to think that the cost will run nearer to $2,000. Far advanced cases require facilities that will enable sleeping indoors during rigorous weather; and we can not build houses suitable for such cases unless we use durable weather-proof material, such as brick or concrete. Assuming that the cost would be only $1,500 per bed, to provide for 5,000 far advanced cases would require an expenditure of $7,500,000. It might be said that such a sum would never be required, that all advanced cases would not want hospitalization, that some would rather stay home; but you can never tell how far a policy will extend once you embark upon it; and I feel sure that to provide facilities for the care of advanced cases, even those able to pay their own expenses, would involve money expenditures far beyond the resources of Virginia.

What are we to do? Are we to pursue the policy which we have followed, to pay particular attention to the patient who can be restored to active life, or are we to turn our sanatoria into segregation homes, where the far advanced tuberculous patient shall stay until he dies? I do not believe that the latter plan is consistent with public health ideas. Conceding that the far advanced case may be a menace to the health of others, I believe that the far advanced case is considerably less of a menace than the moderately advanced case which circulates freely among the members of the community in which he lives.

Frankly, I do not know under whose direction such segregation homes should properly be placed. If they ever should be established and placed with the health department, we would do our best to manage them properly, but it seems to me to be largely a welfare matter; and, if indigence is combined with sickness, I think it would be more a matter of local concern than of State concern.

I am giving to you doctors the benefit of my nineteen years' experience as heath commissioner, and during eighteen of these years we have been operating one or more sanatoria. We believe that instead of there being a just criticism of our policy in endeavoring to exclude far advanced cases, we are really open to blame for having accepted such a large number of cases of moderately and far advanced. In extenuation, we may say that frequently it is hard to draw the line and to catalogue absolutely the condition of the patient; yet we certainly have at each of the sanatoria more far advanced than we should have.

The sanatoria justify themselves as public health activities when they serve as schools for teaching patients how to prevent the spread of tuberculosis; they justify themselves as economic investments when they return to active life people who otherwise would be charges on their families or their communities; but I fail to see how they justify themselves with our limited funds when they serve only as segregation homes. Yet, a number of Virginia doctors, men of high standing, wise men, take issue with this and think that it is the bounden duty of the State to take care of its helpless and hopeless tuberculous. Charity and humanity naturally incline us all to that view, but is such an undertaking strictly public health work until the State has far more money for this work than appears at the present time?

DISCUSSION.

DR. C. L. HARRELL, *Norfolk:* I understand Dr. Williams selected me to open the discussion on his paper because I would disagree with him. I think Dr. Williams and his co-workers are to be congratulated on the great strides made in the fight against tuberculosis in the last few years. Well do I remember when Catawba Sanatorium was opened, with a very few patients; now the three state sanatoria together handle from 1,000 to 1,200 patients each year. These cases when they return home help to educate others. I have often made the statement that I believe the sanatoria in this state do as much good along educational lines as any institution of learning in the state.

There are one or two slight criticisms I wish to make of the present tuberculosis program. First, not more than 25% of the patients that I refer to the sanatoria consult me again, until they relapse too far for help. The only reason I can give for this, they learn just enough to think they can treat themselves without the aid of a physician, and that all their ills are due to tuberculosis.

Another is the state clinics. I have done some work in these clinics. The cases are not studied close enough, because the doctors have too many patients to see. I have attempted to examine as many as forty-seven cases on a hot July day. After you have listened to about twenty-five chests it is almost impossible to tell an abnormal from a normal sound. I think twenty-five a day should be the limit. The cases should also be confined to those who are not able to pay. It is not fair to the local physician for the state nurses to go about in the rural districts and drum up patients, regardless of their ability to pay, in order to make a good showing at the clinic. I think it better to confine your efforts to those who really need attention.

The juvenile type is handled only to a small extent in this state. The children's pavilion at Blue Ridge can accommodate about forty children, and these cases are given expert care. Richmond has a preventorium, where it cares for a few children during the summer months. Norfolk has a preventorium that runs in conjunction with the tuberculosis clinic. It provides for twenty-five or thirty children for two months during the summer. Dr. Grandy tells me that only one case has developed active tuberculosis to his knowledge that has been taken care of at this preventorium since it has been in operation, which is about seventeen years. But think of the large number of children throughout the state that get no attention at all.

I heartily agree with Dr. Williams that the state should not be expected to provide beds and take care of the far advanced cases of tuberculosis. In the first place, a real sick patient should not be taken too far away from home for treatment; secondly, it would be too expensive. But some provision should be made near the homes to provide for the far advanced cases, either by city or county, or the two combined. The far advanced case should be taken out of the home. Dr. Williams says there are about 5,000 active cases in the state at present. Miss Randolph says there are about 5,000 children in contact with these cases. It is from this group of contact cases that we get our future active cases of tuberculosis. We should do all in our power to separate the child from the active case.

Illinois has a law that no child under sixteen years of age shall live in a house where there is a known active case of tuberculosis. Chicago has tried to enforce that law. Chicago had a record March 1, 1927, that showed 2,680 cases, with a positive sputum. The health department reports that only twenty-eight cases under sixteen years of age were actually in contact with any of this number. What Chicago has done on a grand scale, Virginia should attempt to do on a small scale.

I wish to congratulate Dr. Williams and his co-workers on the good work they are doing, but I am hoping for still greater improvement in the near future.

DR. CHARLES R. GRANDY, *Norfolk:* I have heard with a great deal of pleasure what Dr. Williams and Dr. Harrell have had to say in regard to the sanatoria. Having been actively engaged in tuberculosis work for many years, possibly longer than either of the gentlemen who have spoken, I believe we can go even further than Dr. Williams goes. I think that the care of the far advanced case does not lie with the state, but with the subdivisions of the state. In making a check of the amount of money spent by the different cities of the state, I find that the cities of the state were appropriating only about $100,000 a year for the direct care of the tuberculous, and $80,000 of that came from Richmond. In other words, most of the cities of the state were passing the buck, to use the American expression, to the state to take care of their tuberculous cases. They were not giving them proper care and were letting them infect the people around them. They had to pay a mill tax and wanted the state do all the work. I am one of the people who is glad that the mill tax was taken off, because it will not give the cities an opportunity to pass all the burden on to the State.

The sanatoria do splendid work in the majority of cases. Let us look at our own pockets when we go away from home and consider what we had to pay. The white sanatorium patient pays one dollar. Let us compare that with what we pay when we go to a hotel. I frequently tell patients when they ask me where to go, whether to go to Catawba or, let us say for comparison, to Asheville, that at Catawba they pay a dollar a day, and—while they do not get a private bath—they get everything they need and get it for a dollar, and at Asheville they have to pay five dollars a day and up. In the white sanatoria our accommodations and buildings compare very favorably with the big sanatoria. They are very much better than some of the big sanatoria in the North, yet we get the service at this very nominal charge. I think the doctors of the state should be congratulated upon the service they are getting from the sanatoria.

In conclusion, the clinic in Norfolk, which I have been running for a number of years, has at the different sanatoria, between fifteen and twenty cases all the time. We are spending around $2,500 a year on the patients' board. Some patients are able to pay; some have to be taken care of by different organizations. We think it is money well expended and wish we had more. I hope the medical profession will not blame the State of Virginia for not giving the patients more, because I believe the State of Virginia is doing everything possible for the patients. If you make treatment absolutely free and can take care of only a limited number of patients, you will get in many far advanced cases that last forever, and they will keep out the cases that might be benefited.

DR. WILLIAMS, closing the discussion: I am glad to hear the criticisms of Dr. Harrell and Dr. Grandy. We are always glad to hear from the doctors of

the state, even if we do not agree with what they say. I should like to add also that we should be glad to have any doctor in the State of Virginia come to the sanatoria and spend two or three days as our guest, because I believe it is good for the doctors to come there and see the problem and become really acquainted with what is being done.

CAESAREAN SECTION.*

By J. HUNTER PEAK, M. D., Louisville, Ky.

Since the dawn of human history, or since life came into the world, there is no question but many women have lost their lives on account of conditions we recognize today, and which, if known then, and the way of handling them as we know now, the women would not have died from those causes.

Back in the time of the Pharaohs, today, and within the last few years, there have been found many bas-relief works or pictures of women undergoing the operation now known as Caesarean section. We do not know, from any authentic source, whether these women were living or dead when the operation was undertaken.

It has been shown that many, many centuries before the time of Christ, in women who died at or near the end of utero-gestation, the abdomen was opened for the purpose of removing the child in the hope that it might live. About 715 B. C. Pompilius codified the Roman laws and afterward they were called "lex regia." In these laws it was decreed and made obligatory on the part of the public that in all women who died near the end of gestation the child should be delivered in that way. There were two reasons for this: First, that the child might live and be of benefit to the community in which it would be reared; second, if the child did not live, it and the mother could be given a separate funeral.

The name "Caesarean" a great many people have thought comes from "Caesar." That Julius Caesar was born that way I expect there is no question, but the old idea that his mother consented to give her life in order that there might be an heir to the throne is possibly a mistake, because letters have been found written many years later to Julia, his mother, so she must have lived after he was born. Caesar was born about one hundred years before Christ, and some have thought the word Caesarean was derived from this operation, but this is not true, because Caesars lived before that time, there were other rulers by the same name before Julius Caesar came into the world. It is more likely that the word Caesarean comes from the Latin, *caedere* (i. e., to cut), and this means was used to deliver women, not only those where the child was possibly living, but also those who had been dead long enough so that the child was also dead.

The first period of Caesarean section and the development of this work extended from the earliest time, of which there is little known, downward to about the time of Christ, then to the fifteenth or beginning of the sixteenth century, to provide separate burial for mother and child, or for preservation of the child if the operation could be performed sufficiently early after the mother's death.

After the birth of Julius Caesar, according to history, the first living child to be born by Caesarean section and the mother to survive, was in Switzerland, the operation being performed by Jacob Nufer, a Swiss butcher, upon his own wife. That was about the beginning of the sixteenth century. After all the midwives had attempted delivery without success, and after several barber-surgeons had been called in consultation and could not affect delivery, the woman was told there was no further hope. However, the husband told her that he would not let her die, that he would open her abdomen and deliver the child. This was successfully accomplished, and we are told in history that she bore four or five children normally afterward.

From that time until 1876, nearly all the women subjected to Caesarean section died, and, when we consider the crude manner in which the work was done, we can understand the reason for the mortality. That was before the days of asepsis and antisepsis. The uterus was simply opened and the child and placenta extracted. The uterus was then allowed to recede into the abdominal cavity and the external incision was closed. There were two reasons why the woman might die: First, the lochia escaped into the abdominal cavity, infection occurred, and fatality was almost inevitable; or, if the woman survived, she was thereafter an invalid as the result of the infection; second, death supervened as the result of severe hemorrhage.

It was Porro, in 1876, who recognized these two factors as the cause of so many deaths. The

*Read by Dr. Owen M. Wheeler in absence of Dr. Peak (invited guest) before Southwestern Virginia Medical Society, in Bristol, Va., September 22-23, 1927.

surgical technique was not then so well developed as it is now and has been since the advent or bacteriology, and yet Porro recognized the dangers and attempted to forestall them by emptying and amputating the uterus and fixing the stump in the abdominal wall. For this purpose he used what is now known as a figure-of-eight suture placed around two steel pins, transfixing the stump in the abdominal wound. Before that time the mortality from Caesarean section was at least 90 per cent, and subsequently about 52 per cent of the women died. Many of those who survived were in a serious condition because of the long continued infection following the procedure.

Strange to say, during the same year (1876) or the year following, Sanger conceived the idea that the best way was not to perform the Porro operation, which entailed fixing the uterine stump in the abdominal wall, but to suture the uterine incision, replace the uterus in the cavity, and close the abdominal wall just as in any other operation. Credit is due Sanger for the present perfected technique of Caesarean section. He may legitimately be called the father of the present surgical technique of the operation.

There are four periods in the history of the Caesarean section: The first period was where women were delivered in this manner for the purpose of saving the child if possible, or giving it a separate funeral if dead, there being no hope of saving the life of the mother. That period extended from the earliest times to about 1500 A. D. The second period was from 1500 to 1876. During that time very few of the women recovered following the operation, and it was never undertaken except as a *dernier* resort in an attempt to save the life of the child as well as the mother.

It was stated by Budin, of Paris, and by Spaeth, of Vienna, also by Murphy, of London, and authorities in all the other great centers of medicine and surgery in Europe, that not a single patient survived the operation of Caesarean section from 1778 to 1876, a period of ninety-eight years. However, during that time, Harris, of New York, had collected sixteen cases with a mortality of 56 per cent. Subsequent to the Sanger operation and its perfected technique, Harris collected 1606 cases with a mortality of only 4 per cent; in other words, 96 per cent of the patients recovered.

The period from 1500 to 1876 was what might be termed the experimental stage of the operation, which was considered very dangerous until the technique was improved and simplified by Porro and Sanger. From that time (1876) until 1907 may be considered the third period, or the period of perfection of the technique, and where the lives of nearly all the patients were saved. With the present perfection of the technical details of the procedure, Caesarean section is about as safe as any other abdominal operation, everything else being equal.

From 1907 until the present time there have been a few operators who have advocated and practiced Caesarean section without entering the abdominal cavity, that is by the extra-peritoneal method. It is claimed this plan is more advantageous than ordinary Caesarean section in the presence of frank infection, or in cases where it is known infection might have been easily acquired and probably exists, and where delivery otherwise than by operative means is impossible. I understand the extra-peritoneal method is now practiced by DeLee and several others in this country in cases where infection has already occurred. I wish to say that I doubt very much whether, under our present methods of protecting the abdominal cavity from extension of infection, any such operation is ever justifiable. The procedure requires too much time, it is too tedious, and it is unsatisfactory, because the peritoneum is often torn, adjacent structures, especially the urinary bladder, are injured, and disastrous results sometimes follow. At all events, the extra-peritoneal method should never be attempted by any surgeon who has not thoroughly mastered the technique of the procedure. It is infinitely more difficult and entails greater danger to both mother and child than the ordinary Caesarean section.

It is not my intention to describe the technical details of Caesarean section,—the moving picture will do that,—but it may be interesting to briefly mention some of the recognized indications for the operation.

It has always been known that the pelvis of woman may be subject to faulty development. When a woman is normally developed, when her pelvis and everything else is normal, we know that she has very little trouble

in giving birth to her child through the natural channel; but sometimes there is faulty development of the pelvis, the most common type being what is known as infantile pelvis.

I have performed sixty-five Caesarean sections. The fifty-fourth operation was performed last April and will presently be shown in moving picture, and since then ten other patients have been similarly operated upon. The case to be illustrated by the moving picture tonight belongs to that class known as infantile pelvis, the antero-posterior diameter being only two inches and the lateral diameter not more than four inches, making it impossible to deliver the woman by version or any other method than Caesarean section. The patient was otherwise perfectly normal and healthy. This child was the third that I had delivered for the woman in the same way, and she and all three children are living.

Any disease or deformity causing marked change in the contour or size of the pelvis may be a direct indication for Caesarean section. The so-called Nagele's pelvis is an example of this type. In such cases the deformity is caused by fusion of the sacrum with the ilium, the result of arrested development, giving the appearance of only half a pelvis. Tuberculosis, osteoma, cancer and other diseases may cause pelvic deformity and bring about the necessity for Caesarean section. I have seen two cases in which Nagele's pelvis was present, and recall several others where pelvic deformity was due to tumors.

About five years ago I presented before our county society a paper on the indications for Caesarean section, and reported forty-four cases, ten or fifteen of the patients being present with their children. I do not now recall how many different indications for the operation were represented by the group of cases presented, but there were many.

In the presence of cervical neoplasms, particularly advanced carcinoma, I believe Caesarean section is indicated. Malignant disease involving the vaginal outlet and the rectum, on account of the great amount of neoplastic tissue, may be an indication. I have seen one case, the only one of the kind I have observed or of which record can be found, where a tumor in the anterior vaginal wall filled the entire pelvis and prevented normal delivery. A small tumor was noticed when the first child was born but the patient did not have it removed. She again became pregnant and this time was sent to the hospital and prepared for delivery by Caesarean section because of obstruction from the tumor. While on the table with the operation started, labor pains became so violent that the child's head, pressing downward against the tumor, caused it to rupture. The contents had much the appearance of a dermoid cyst, with very foul odor and other evidences of the presence of considerable purulent material. Caesarean section had to be completed and the child lived but the mother died. This case was not in my personal practice, but I happened to be present at the operation.

Any tumor in the anterior uterine wall, such as a fibromyoma, situated low between the parturient canal and the urinary bladder, may so fill the space as to obstruct descent of the child's head, and thus constitute an indication for Caesarean section. I operated in one case where the woman had previously given birth to fourteen children in the normal way. When pregnant with the fifteenth child it was found she had a uterine fibromyoma which prevented the child from making any presentation whatsoever, except a cross presentation, and normal delivery was impossible. Caesarean section was performed, the child lived, and the woman left the hospital on the ninth day after operation. This patient stated that if she ever had any more children she wanted them delivered by operation, that she did not wish to bear further children in the natural way, since she had seen how easy it was to be delivered by Caesarean section.

Ovarian tumors may be so situated as to obstruct delivery, because of their great development, or possibly by adhesions to other pelvic viscera. Such tumors sometimes develop almost entirely in the downward direction instead of upward, and may so fill the pelvis as to effectively prevent delivery.

Sometimes anterior or ventral fixation of the uterus may be the cause of severe dystocia, on account of distortion of the normal uterine relations, so that when labor begins Caesarean section may be found necessary.

Extensive cervical and perineal lacerations in previous labors, especially where the rectum is involved, even though successfully repaired at the time, constitute a valid indication for Caesarean section. The same may also be said of scar tissue of extensive nature

in the vaginal walls. Under such conditions, if the woman is delivered in the normal way in subsequent pregnancies the extensive scar tissue is certain to be separated; the injury may extend into the uterus and the woman succumb from infection. Moreover, ruptured scar tissue rarely heals, and that of itself would be a constant source of danger.

Advanced pulmonary tuberculosis, where the woman is so exhausted from the effects of the disease that she cannot withstand normal labor, may be an indication. Many women with tuberculosis have lived for years after delivery by Caesarean section, whereas their lives might have been lost had they been delivered in the normal manner.

Serious cardiac disease, such as myocarditis, valvular lesions where there is no attempt at compensation, etc., may be a valid indication. In the presence of serious renal lesions Caesarean section may prevent extension of the disease and prolong the life of the woman for many years.

In persistent occipito-posterior positions, where the high forceps operation would be necessary to effect delivery, and especially where efforts at labor have already exhausted the woman and complete uterine inertia has supervened, Caesarean section is indicated. Crossed or shoulder presentation, particularly where one arm is protruding, must also be considered as an indication.

Puerperal eclampsia is sometimes an important indication for Caesarean section. I do not mean to say, however, that the operation is indicated in every case of eclampsia. Take a case, for instance, where a woman, rather advanced in years, is pregnant with her first child, where possibly the viability of the child is certain if given a chance to be born, but where the mother's condition is very serious, where the cervix is elongated with vaginal outlet small, where the cervix is difficult to dilate, and where conditions are such that it would be impossible to do anything of advantage unless done quickly, Caesarean section in my opinion offers the best opportunity for both the mother and the child. Eclampsia seldom develops until after the seventh month of gestation, and in such cases prompt Caesarean section may be the means of saving mother and child.

Placenta previa, especially of the centralis type, is in itself in many instances an indication for Caesarean section. I have operated upon several patients of this type and have never lost a child that was living when the operation was started, and only one of the mothers succumbed. This patient was a Mrs. W., who had central implantation of the placenta and when first seen by me was so exhausted from hemorrhage that I could see nothing to be done except take her to the hospital and complete delivery as quickly as possible. The child was already dead, the cord was prolapsed, and an arm protruded through the placenta into the outside world. I had many times performed version and delivered women in that way. This we know is always dangerous to the child, but in this case the child was already dead. Under the circumstances I believed possibly I could deliver this woman by version, and while she was in the hospital I attempted it, but the hemorrhage was so great that it could not be sufficiently controlled to save her life. I believe in that case Caesarean section was the better plan. It is relatively a simple operation, can be performed very quickly, and, everything else being equal, it is practically devoid of danger. This particular patient died; the child was already dead when I was first called, it being the only fatality in fifty-five cases. All the other mothers and children are living and well today.

It is thought by many physicians that it is extremely hazardous to deliver a woman by Caesarean section where forceps have been previously used. If forceps have been tried under strict aseptic precautions with the patient in the hospital,—and I think no woman should be delivered with forceps except in a well-equipped hospital,—I do not believe it would be hazardous to deliver her at any time afterward by Caesarean section. However, it is recognized that the dangers are increased where a great many vaginal examinations have been previously made, and yet the woman whose moving picture you will see presently had been in labor for thirty-six hours before I saw her the first time and I expect one hundred vaginal examinations had been made by those who attended her and attempted to complete delivery, without any special precautions whatever being taken. Complete uterine inertia had supervened when I first saw the woman, and examination disclosed the fact that she could not be delivered in the

normal way. She was placed in the hospital and allowed to rest until the next morning when Caesarean section was performed. Despite the unfavorable conditions, due to repeated examinations and attempts at delivery, she had no trouble following the operation,—no fever, no infection, no sepsis. Under any circumstances where the conditions demand the high forceps operation, I believe Caesarean section is much safer. High forceps application often causes serious injury to the soft parts of the mother, and there is always danger of fatal injury to the child.

I have already detailed much of the history of the woman whose picture is to be shown. She was perfectly healthy in every respect, but had an infantile pelvis. She was anxious to have a family and was willing to bear children even after she knew they could be delivered only by Caesarean section. She was a very intelligent and deeply religious woman. The first operation upon her has been sufficiently described.

The second time she was admitted to the hospital a day or two before the time when labor was expected. No vaginal examination was made and none was necessary hntil the advent of signs of beginning labor. When the cervix was found quite well dilated she was taken to the operating room and again delivered by Caesarean section. No trouble developed following the first operation, even though perfect asepsis was probably not attained, but after the second operation, when we were certain of aseptic technique throughout, a stitch abscess developed. However, this caused little trouble and the patient was dismissed well on the fifteenth day after operation.

Before the third operation the woman was kept in the hospital under proper care for some time, her physical condition was carefully watched, her urine was frequently examined with negative results, and during the entire time she complained of nothing. She had no pain and expressed herself as feeling perfectly well. Strange as it may seem, at the third operation the uterus was found firmly attached to the anterior abdominal wall by omental adhesions, there being nothing between the uterus and the abdominal wall except the omentum, to which both the uterus and the abdominal wall were attached. It was, therefore, impossible to effect delivery of the child by Caesarean section without dissecting the omentum from the surface of the uterus. It was thought unwise to separate the adhesions between the omentum and the abdominal wall because of the extensive area covered and the large blood vessels in the omentum which, if divided, might have caused hemorrhage and death. The omentum was accordingly left attached to the abdominal wall just as it had been since the second operation, making an incision through the omentum and separating it from the uterus in order to complete the operation. The woman had complained of no symptoms during the time these adhesions had existed, so evidently they did no harm. To have dissected the omentum from the abdominal wall would have required considerable time and would probably have increased the danger of the operation. After dissecting the omentum from the uterus the latter was incised and the baby and placenta delivered. The uterine wall was badly torn during the procedure as the work had to be done hurriedly. The placenta was attached anteriorly and had to be incised before the child could be delivered.

In this instance a modified Porro operation would have been necessary because of the torn condition of the uterus, but fortunately both the woman and her husband, over their signatures, had requested me to do something that would prevent further pregnancies, as they already had three children and all had been delivered by Caesarean section. A supravaginal amputation of the uterus was performed, the uterine stump allowed to recede into the abdominal cavity, and closure of the various structures effected in the usual way.

The child was living and cried lustily within four minutes after being delivered. The convalescence of the mother was without untoward incident and she left the hospital with her baby on the fourteenth day after operation.

I might mention that in the after-care of patients subjected to Caesarean section an obstetrical binder is applied, just as after normal labor, and the abdominal wall is further protected by adhesive plaster first. Pituitrin is administered every four hours for the first few days to prevent gaseous distention.

The moving picture now being shown was taken at the Deaconess Hospital with the con-

sent of the patient and her husband. The various steps of the operation are fairly well illustrated as will be observed by those of you who can see the picture. What is apparently a serious hemorrhage during delivery of the child is principally from the placenta and little attention was given to it. The woman lost very little blood during the operation.

In closing, I wish to say that just thirteen days after the operation the patient witnessed herself being operated upon when the picture was shown at the hospital for my approval.

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ORAL SEPSIS FROM THE STANDPOINT OF INTERNAL MEDICINE.*

By THOMAS P. SPRUNT, M. D., Baltimore, Md.

The Doctrine of Focal Infections

Before taking up the relationship of mouth infections to the general health, let us first consider the idea of focal infections in general, of which oral sepsis is one in particular. The doctrine of focal infections as we are considering it now is comparatively new. The importance of portals of entry or gateways of infection has been kept in mind as long as bacterial diseases have been studied. Only fifteen or sixteen years ago Billings and his co-workers emphasized this doctrine—that bacteria may lurk in certain localized areas, set up inflammation there, may cause little or no local disturbance, but are capable of bringing about diseased states in different parts of the body by the intermittent seeding off of bacteria into the blood stream or by the absorption of toxins from such an area into the blood stream. It is a fascinating doctrine. In theory it has supplied an hypothesis concerning the direct cause of many pathological states the etiology of which was formerly quite obscure. In practice it has been even more dramatic, tending to change our position in the therapeutics of chronic diseases from one approaching therapeutic nihilism to one full of buoyancy, activity and optimism.

You are, perhaps, familiar with this Osler anecdote. When a young physician asked Dr. Osler how he should handle a patient with chronic arthritis, Dr. Osler is said to have replied, "When you see a chronic arthritic come in at the front door, climb the back fence". Do we climb the back fence today? We do not. We approach the problem with zest and earnestness, searching the patient fore and aft, from gums to prostate, for possible foci of infection. We then outline a plan for the eradication of such foci, for the building up of his general health, and for the further treatment by physiotherapy, thermotherapy, vaccine therapy, pharmacotherapy, and other suitable forms of therapy at our disposal. Do we obtain better results than we might expect by following the Oslerian suggestion? We believe that we do although it might be difficult to convince the intelligent skeptic if he insisted upon rigid scientific proof; at least it might be difficult to convince him that the removal of the focal infections was the cause of the improvement noted, for it would seem an undoubted fact that the doctrine of focal infections has served as a tremendous stimulus to other forms of therapy that are usually regarded as adjuncts to the method by which the assumed cause has been removed. The optimism resulting from this stimulus has been helpful. Most physicians are therapeutic optimists and it is well to remember that therapeutic optimism is helpful to the patient as well as to the physician.

Abuses of the Doctrine

The focal infection doctrine is a rational one. It is an appealing one. Those of us who work in a clinic where it is the daily thought and practice to search carefully for possible foci of infection are apt to become placid believers in this type of therapeutic endeavor and to forget that there are in the profession aggressive doubters. It is always fortunate that there are aggressive doubters and it seems quite probable that the number of these doubters will increase, for the more radical among us are carrying this doctrine to unwarranted extremes. The patient with arterial hypertension and with arteriosclerosis has his tonsils removed and several teeth extracted. If his blood pressure does not go down and signs of marked improvement are not apparent he is told that the focus has not been found and the search continues. Perhaps he is sent to some other clinic in the hope that some one else may be able to find the focus of infection that is the cause of his disease. Patients have been led to believe, or perversely believe of their own accord, that the extraction of an infected tooth will cure practically any ill, like

*Read by invitation before a joint meeting of the Richmond Academy of Medicine and the Richmond Dental Society, November 8, 1927.

the wonderful potions of the Arabian Nights. Certain enthusiasts in the profession have advocated the resection of a great part of the large intestine in the treatment of schizophrenia and other mental disturbances. Such extreme measures tend to bring our doctrine into disfavor, to increase the list of aggressive doubters and to inspire the jokesmiths that notice the medical profession.

Breadth of View in Considering Causes of Disease

Such tremendous emphasis upon focal infections or upon any other one factor would seem to show a lack of appreciation or of the proper evaluation of the causes of disease in general or indeed of the causes of any biological phenomenon. We have all been taught to think of predisposing causes and of exciting causes, though in the years following the advent of bacteriology medicine paid but scant attention to the former. We have been taught, too, that while practically all the so-called exciting or direct causes of disease are in our environment, the predisposing causes may be due either to inherited or to acquired, that is environmental, factors. Medicine is being more and more influenced by fundamental biological thought. Biologists, during the past few decades, have been particularly interested in the heredity and in the development of the individual. They show that hereditary factors are of considerable importance in the production of many characters that are of consequence in disease. They indicate, for example, that the duration of life is strongly influenced by heredity and hence one must keep such factors in mind in considering the chronic diseases and disabilities that aid in bringing life to an end. What a complicated list of possibilities there are to consider in determining why a man is what he is at the age, say, of fifty! Much depends upon who were his father and his mother; upon what particular spermatozoon happened to encounter what particular ovum (for the differences may be great); upon the manner of the union of the chromosomes of those two organisms; of the environmental circumstances surrounding the developing ovum or zygote; the infant's entrance into the world; the numerous physical, chemical, psychic and social environmental influences playing upon the infant, upon the child, upon the adolescent and upon the adult man. With so many possible factors to be considered why lay all the emphasis upon one! The constitutional factors may be the determining ones in the incidence of an infection, in the localization perhaps of the infection, and in the course of the infectious process either with or without the removal of the primary focus. You would enjoy reading, in this connection, the little book by Dr. Raymond Pearl entitled "The Biology of Death." In that book he likens the animal constitution to an eight day clock. It is wound up to run for eight days. Some of the poor ones may stop after two, or three or four days. The good ones run for eight days, the best ones for ten days or longer provided no extraneous agents like sand get into the works. We believe that oral sepsis and other focal infections may act as sand in the human constitution and that they should be eradicated if it can be done without too much damage to the essential works.

Difficulty of Scientific Proof of Doctrine of Focal Infections

The doubters to whom we have already referred maintain that we have not yet presented scientific evidence that the practice of removing foci of infection is helpful and sound, and we must admit that they are right. We are all convinced that improvement does not always follow such procedures. We have, on the other hand, seen many cases in which the improvement is striking. There are several difficulties in the way of scientific proof. We must take into consideration the psychology of the sick and recognize the fact that marked improvement may follow the ministrations of Christian Science healers, the institution of bizarre diets, or the exercise of other medical fads. We must consider, too, the natural course of the disease with or without therapy. Many chronic disease processes are characterized by very striking spontaneous remissions. A helpful method of study would be by means of carefully controlled series of cases, the one treated by removal of infectious foci, and the other treated in all other respects similarly but without the removal of such foci. Such studies may be conducted with comparative ease in acute diseases which run a relatively short course but are much more difficult in the chronic diseases, and those which have been attempted have not been particularly convincing to the advocates of either side of the controversy. So much for the clinical evidence.

From the laboratory or experimental side, animal experimentation does not satisfy the doubter for he recognizes that such experiments bear only crude resemblances to the diseases in human beings. One may, therefore, well hesitate before attempting to convince the honest and intelligent skeptic; but the doctrine is so appealing that we are apt to be greatly impressed by striking clinical examples such as the one that I shall now cite you.

Illustrative Case

This was a case of a toxic hepatopathy that has been referred to several times in the literature by Barker. The patient was observed on the public wards of the Johns Hopkins Hospital some twelve or fifteen years ago and was one of the earlier cases that stimulated there a special interest in the possible relationship of oral sepsis to diseases of the internal organs. The patient was a hotel keeper, forty-eight years of age, who had used alcohol to great excess and during recent years had suffered from attacks of indigestion especially after debauches. His illness had begun insidiously about five years before and was characterized by progressive weakness, loss of weight, and digestive disturbances. On physical examination there was marked pallor and emaciation. There was extreme pyorrhoea alveolaris, all the teeth sitting in pus baths. There was a firm, palpable spleen and a greatly enlarged liver, its edge being felt at the level of the umbilicus in the right mammillary line. There were a marked secondary anaemia, an achlorhydria gastrica, moderate fever up to 100.5°, slight jaundice, and a somewhat confused mental state. During the first period of his hospital stay attempts were made to clean up the mouth by repeated irrigations with antiseptic solutions but the pyorrhoea continued most profuse and the patient's general progress was downward. It was then decided to extract the infected teeth and after this was done the general improvement was most surprising. Within a week the temperature was normal, the mouth was clean, and the patient stated that he felt much better. The reduction in the size of the liver was so speedy, after the removal of the teeth, that it seemed quite impossible to doubt a direct relationship between the oral sepsis and the hepatic enlargement. The patient gained rapidly in weight and left the hospital about three weeks after the teeth were extracted feeling very well. One is tempted to interpret this case as illustrating a constitutional susceptibility of the liver to disease, a further constitutional defect of the nervous system that permitted and encouraged an excessive alcoholism, with a resulting alcoholic cirrhosis. The development of a severe pyorrhoea alveolaris had brought about a general intoxication with the toxic hepatopathy and a severe secondary anaemia. With the removal of the oral sepsis the enlargement of the liver disappeared, the blood rapidly improved, the patient gained in weight and his general condition was greatly bettered.

Types of Oral Sepsis

We believe that oral sepsis shares the honor, or the dishonor, with infected tonsils and paranasal sinuses, as the chief among focal infections. In general we would expect tonsillar and sinus infections to predominate in youthful individuals and oral sepsis to be of more importance in people of middle age and later life. The types of oral infection that interest us most are superficial suppurative gingivitis or pyorrhoea alveolaris and the deeper periapical infections resulting from infected pulp and associated usually with pulpless and, perhaps inadequately treated, pulpless teeth.

Results of Oral Sepsis

In regard to the disturbances of the general health that may result from focal infections in general and from oral sepsis in particular, we have already intimated that extremists in the medical profession have made absurd claims and have instituted tragic surgical procedures to cure almost all the ills to which the human flesh is heir. But we need not let this bother us too greatly when we remember the unfortunate tendency in this country to push ideas and practices to extremes. Among the pathological conditions in the body that are more generally accepted as being frequently secondary to such focal infections we may mention: infections of arthritis and its associated myositis and fibrositis; infections of the nervous tissues, especially neuritis, retrobulbar neuritis, chorioretinitis and other lesions in the ophthalmological domain; endocarditis and other inflammatory lesions of the heart; nephritis; secondary anaemias; certain gastrointestinal disturbances; and we believe also that certain generally run down states of the system appear to be sequels of, or at least

are very unfavorably affected by, the presence of primary infections localized in some part of the body.

Pathogenesis

In regard to the method by which these disturbances may be brought about it would seem that direct extension of infection may occur from infected teeth and gums to other structures of the mouth, to the paranasal sinuses, to the tonsils and pharynx, and by aspiration to the lower respiratory tract. Gastrointestinal disturbances may result from the constant and prolonged swallowing of purulent, infected material of pyorrhoea, especially in association with an achylia gastrica. In the case of the production of more distant lesions there must usually occur an actual metastasis of bacteria, especially streptococci, but it seems possible that some disturbances may arise from the absorption into the blood of poisonous material from the locally infected areas.

Localization of Metastatic Foci

The question of the localization of metastatic foci is a most interesting one. You are doubtless familiar with the experimental work inaugurated by Rosenow and confirmed by some other bacteriologists and their interpretation of the experimental results to the effect that the bacteria themselves, by reason of their adaptation to certain degrees of oxygen tension or other physical and chemical conditions, have acquired the property of localizing in certain definite structures of the body where such physico-chemical conditions obtain. These experiments and interpretations have never seemed to me particularly convincing, however fascinating they may be to a bacteriologist. It would seem that the determiners of localization would be much less superficial and would depend rather upon innate and acquired susceptibilities of different tissues of the host rather than upon some quality of the invading microorganism. The pathologist often sees interesting examples of tissue susceptibility or resistance. Why, for example, does one almost never see a miliary tubercle in the pancreas in a case of generalized miliary tuberculosis, although other focal necroses may be found in that organ.

Conservatism in Prognosis

In the treatment of oral infections for systemic disease conservatism in expectation, and especially in prognosis, may save us much disappointment, many heartaches and perhaps even some lawsuits. The prognosis, of course, in any given case will vary greatly with the attendant circumstances. If we have a patient with marked oral sepsis, a moderately developed secondary anaemia and a mild general debility, we may by removing the oral sepsis and advising a period of rest or vacation and general upbuilding measures, obtain a speedy result highly satisfactory both to patient and physician. In other conditions in which the process seems to be a toxemia instead of a metastatic infection the outlook should be just as encouraging. But, on the other hand, we may have a case of well developed infectious arthritis and just as definite oral sepsis. After careful search we may be able to demonstrate no other possible source of infection and we will feel reasonably sure that the infection in the joints has resulted from that about the teeth. We will, therefore, feel it to be our duty to remove the infected teeth to prevent the repeated or the continuous reinfection of the joints, hoping that, with the source of further infection removed, we may be the better enabled to combat the infection that already exists in the joints. But the infection is there in the joints, it is not tied to the roots of the teeth, and it is altogether unfair to expect it to be extracted with the extraction of the teeth. As obvious as this interpretation would seem to most of us it is not universal and one not infrequently hears expressions of regret and disappointment that the joints are not well a week or two after the oral sepsis has been satisfactorily treated.

Prophylaxis

Then there are those lamentable cases where we are convinced that the streptococcus viridans has been seeded off from a periapical area and has lodged in or upon a damaged heart valve with the formation of a nidus of growth there and the production of the clinical picture of endocarditis lenta or subacute bacterial endocarditis. We may be sure that the source of the infection was in the infected tooth but experience has taught us that not in one case in a thousand will the extraction of that infected tooth be of any help in controlling the endocarditis. Here, indeed, is a case where an ounce of prevention would have been worth a thousand tons of cure.

For those of us who believe in the doctrine of focal infection and who practice it in therapy it is logical to extend this belief and this practice to prophylaxis, but in spite of its logic our position at once becomes more

difficult. It may not be easy to persuade a person to sacrifice what seems a sound and useful tooth because we believe it to be infected and a potential source of danger to him. Too frequently we have no data concerning his constitutional defects or susceptibilities and we cannot deny that many people have enjoyed oral sepsis to a ripe old age without suffering obvious damage therefrom. It is often difficult to decide just how much professional pressure should be exerted on such patients. In certain cases the indications may be clear enough. In a patient with a past history of one or two attacks of acute arthritis or in a patient with an old mitral lesion, one would be inclined to be radical rather than conservative in the treatment of oral sepsis.

The Pulpless Tooth

In this connection, another point of doubt assails us. While to a certain extent the whole subject of focal infections is controversial, that controversy pales into insignificance compared to that which has raged about the pulpless tooth. When is a tooth infected? What constitutes oral sepsis? Are all pulpless teeth dangerous? We had felt that we had a definite criterion in the evidence furnished by radiograms but now there are those who maintain that teeth with large areas of rarefaction indicate a satisfactory resistance of the tissues and are relatively of little danger and that, on the other hand, many pulpless teeth with no radiographic evidence of infection have been shown to be infected by bacteriological studies.

The reunion of medicine and of dentistry that has come about largely through the influence of the doctrine of focal infection has been a great stimulus to the rejuvenation of dental research and of medical research allied to dentistry. Much of this research has been done by men who were fitted for it neither by temperament nor by training. As in other domains of medicine, much of this research has been fruitless and some of it harmful as a result of faulty observations and erroneous interpretations. We have every reason to hope, however, that the masters among these research workers will, after a while, supply us with the data we need in regard to infected teeth and that they will so improve the technique of dentistry as it is related to infection that the problem of oral sepsis will ultimately be a much less conspicuous one.

Some striking figures have been published concerning the bacteriology of pulpless teeth by Haden and other bacteriologists and research laboratory workers of national repute. Some of you may have read Haden's articles and seen his exhibits at National Conventions during the past year or two. He has cultured thousands of teeth which were extracted and treated bacteriologically with a uniform technique. One method of study was by means of inoculating deep agar tubes. By this method he found that of 400 vital teeth that had been extracted 85 per cent were sterile. Of 600 pulpless teeth that were radiographically negative 44 per cent were sterile. Of 500 pulpless teeth that were radiographically positive 26 per cent were sterile. On the other hand, of the vital teeth 4.8 per cent showed more than ten colonies of bacteria. Of the pulpless teeth that were radiographically negative 46 per cent showed ten colonies or more and of the pulpless teeth that were radiographically positive 62 per cent showed ten colonies or more.

Co-operation of Physician and Dentist

In spite of these bacteriological reports we have not yet come to the point where we are willing to recommend freely the extraction of a pulpless tooth that shows no other evidence of infection. We prefer to have such teeth watched carefully by the dentist with radiograms taken three or four times a year. We thus would attempt to steer a middle course between those who are quite radical on the one hand and those, on the other hand, who attempt to save too many teeth that present definite signs of infection. In this connection we feel that it is of the greatest importance that physician and dentist work together in harmony and with sympathetic understanding of each other's aims and ideals. Dentistry was once and is again becoming a subdivision of medicine, a medical or a surgical specialty. We, as physicians, need the help of the dentist in decisions affecting his domain and we believe that we are in a position to be of considerable help to him in the practice of his profession.

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RINGWORM INFECTION OF THE GLABROUS SKIN.*

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In general we recognize three types of ringworm infection of the glabrous skin: First, tinea circinata, or the ordinary ring-

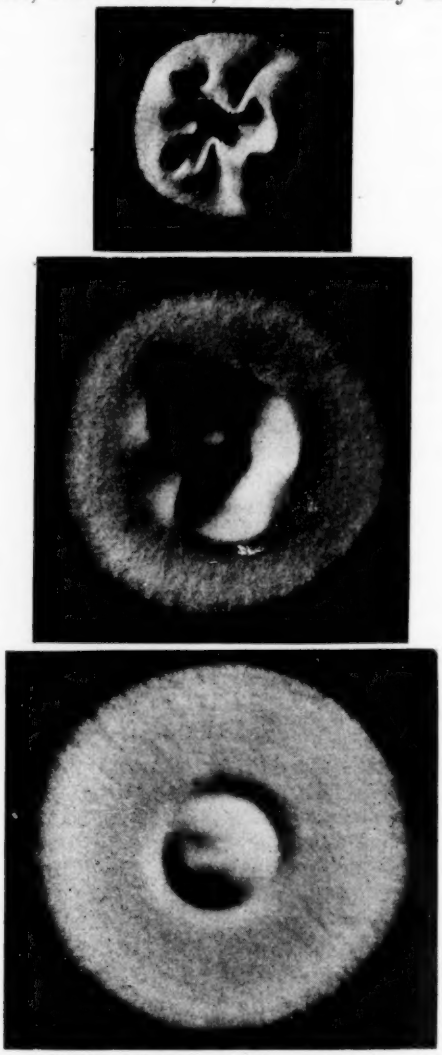

Fig. 1—Trichophyton Rotundum. Cultures (a) 30 days on peptonized gelatin. (b) 30 days on glucose gelatin. (c) 30 days on maltose gelatin. (Recovered from a Herpes Circinei lesion on the back).

worm lesion so well known to all of us; Secondly, eczema marginatum, involving the genito-crural and axillary regions; Third, acromycosis, a name I have given to designate ringworm infection of the terminal portions of the extremities.

When considering the glabrous skin as a whole, the term ringworm conveys the usual impression of erythematous and squamous

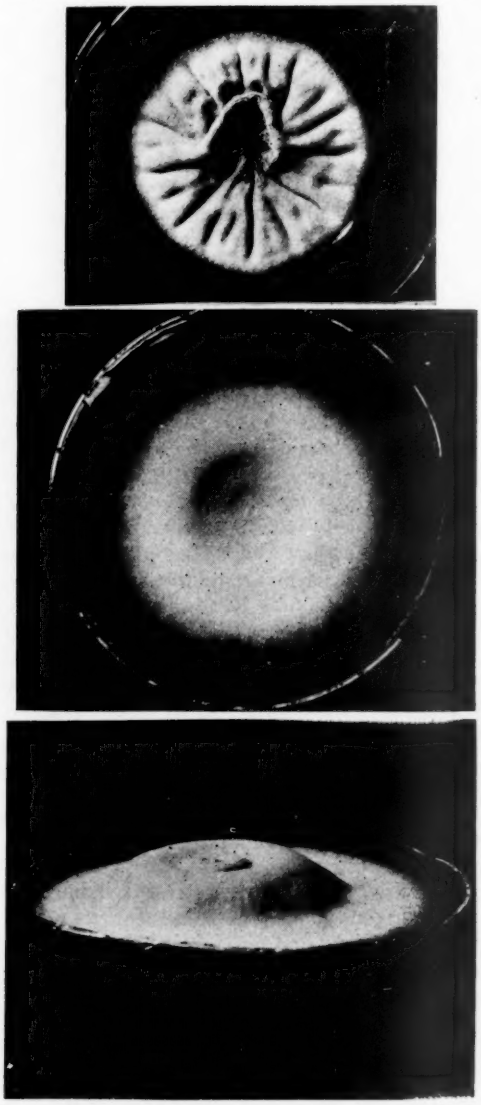

Fig. 2—Cultures of Epidermophyton Clypeiforme. (a) 35 days on peptonized gelatin. (b) 30 days on glucose peptone. (c) 60 days on glucose gelatin. (Parasite recovered from a case of Eczema Marginatum involving genito-crural and axilary regions).

areas, remarkable for their contour and exact geometrically oval or round forms with sharply limited borders. These circles are almost

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without exception complete and their surfaces are made of scales, pustules, or even crusts. As further characteristics we notice the vesiculation similar to that found in eczema. However, in this case the vesicles occur on the border of the lesion or in concentric rings, in contrast to their irregular and general distribution in eczema. (Fig. I).

The second type, eczema marginatum, was definitely proven parasitic in 1908 by Sabour-

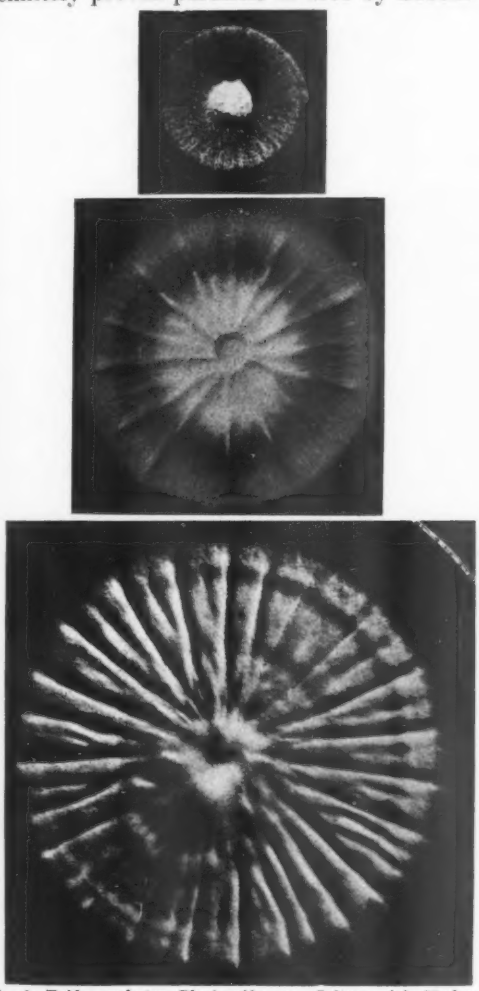

Fig. 3—Epidermophyton Plurizoniforme. Cultures (a) 35 days on peptonized gelatin. (b) 45 days on glucose gelatin. (c) 75 days on glucose gelatin. Note pleomorphism in center. (Recovered from case of acromycosis—both hands and feet).

ard, who believed at that time that one type of epidermophyton caused all these infections. Since then several new parasites have been found and cultured. (Fig. II and Fig. III).

Eczema marginatum is usually located on the inner surface of the thighs, beginning well up in the groin in the form of one or several bright red, sharply limited patches that itch intensely. These patches spread rapidly and coalesce to cover large surfaces, limited by the well known festooned and vesicular border. New small lesions are usually seen just beyond this border. The eruption may reach the rectal region or extend down to the knee if not properly treated, and the duration of the disease may be from weeks to months, or even years.

Eczema marginatum differs from herpes circinata by its predilection for the covered regions and by the tendency for the individual lesions to coalesce and form large plaques with polycyclic borders. The patches are not always oval or round and do not always form a complete circle.

Intertrigo is differentiated from eczema marginatum by its perfect symmetry and its indefinite border. In erythrasma the surface is uniformly dry, red, and covered with a fine scale without any vesiculation on the borders.

Ordinary eczema is less regular in form and the eruption is much more polymorphous in character. In addition, eczema is comparatively rare in these regions of the body. In localized dermatitis we can always get a history of some irritant.

The third type, acromycosis, ringworm of the feet and hands, does not appeal to any great degree to the average medical man, but during certain months of the year in this region, the disease and its complications comprise 20 to 30 per cent of the specialists' practice. Although the lesions in themselves appear trivial to the patient, it is the terrific itching which brings him to us. Where large numbers of men and women are grouped together, as in armies, colleges, schools, *et cetera*, clinically one-third of them show ringworm infection involving the hands or feet. Only about one-half of this number can be proved parasitic by microscopic findings, while cultural demonstration of the parasite is even more difficult.

Ringworm involving the extremities gives us an entirely different picture from that of the first two types, and may easily be confused with dyshidrosis, eczema, dermatitis or maceration caused by excessive sweating. The involvement is usually in the interdigital folds, especially between the fourth and fifth toes

and on the flexor surface of all the toes. The horny layer of the skin appears white, macerated, and peels off easily in large flakes, leaving a rosy, red surface covered with a thin creamy pus. On the spreading borders of these lesions, or disseminated through them, are seen numerous vesicles. These vesicles are remarkable for their depth, irregular contour, and the fact that they vary so in size,—points of great importance in differentiating them from the vesiculation of ordinary eczema.

This same type of lesion when found on the bottom or the sides of the foot appears as a dry, scaly eruption, less often vesicular and pustular, depending upon the degree of involvement.

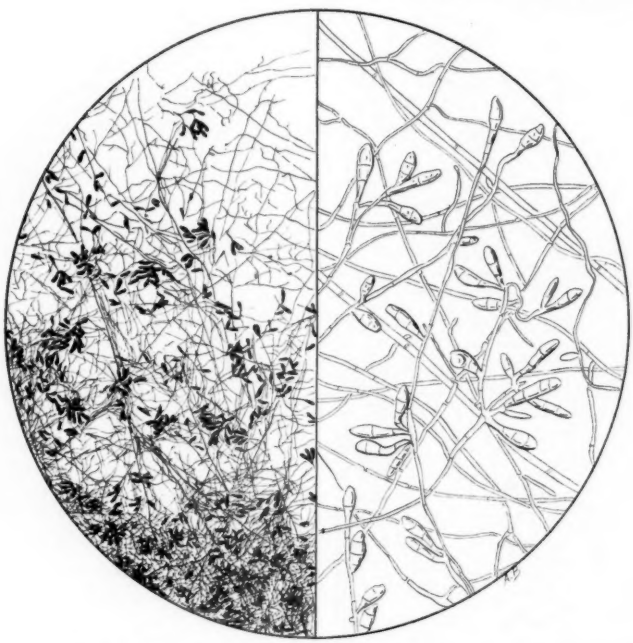

Fig. 4—Epidermophyton Clypeiforme. Culture of eleven days grown in a hanging drop of glucose boullon showing organs of fructification.

The parasite of this group, called the epidermophyton, photographs of which are shown in Fig. IV, has a special preference for darkness and moisture; hence, by far the largest number of cases involve the lateral and inferior folds of the toes. In old and neglected cases the infection may extend also on the dorsal surface of the foot and take on the appearance of impetiginous eczema.

The hands and fingers are involved much less often, and the lesions here appear more superficially in the form of scaly festooned patches or a mild and often fleeting vesiculation. Here, again, the thick, horny layer of skin of the palms offers the greatest protection to the parasite, and we find the disease in this location most frequently.

A very unhappy complication in this disease is the involvement of the nails of the fingers or toes. The infection is under the nail plate and resists all known forms of treatment at the present time. Surgical removal of the nail offers the only hope of a cure. However, the nails may be involved primarily without spreading to the surrounding skin. I recall the case of a prominent dermatologist and investigator in this field who has had an infection of the nails of the two large toes for thirty years without any encroachment upon the surrounding skin.

Differential Diagnosis

Ordinary vesicular types of eczema involving the entire foot or hand offer no difficulty in diagnosis. The isolated patch is another problem. However, the eczematous lesion is almost invariably found on the dorsum of the foot, and the vesicles are small, of equal size,

and located superficially. The skin in which the vesicles are embedded is red and clean looking, having none of the macerated soggy appearance of ringworm.

True dyshidrosis is to be told from ringworm by the following facts: Dyshidrosis is a recurrent eruption that usually appears in the spring or fall. It begins symmetrically on the hands or feet, or on all four extremi-

Fig. 5—Culture of nine days grown in a hanging drop of glucose bouillon showing organs of fructification (1 to 350).

ties at the same time: it is preceded by sensations of burning, itching and tension, all of which may be very severe. The eruption usually appears suddenly and often spreads over-night to involve the entire hand or foot. Clinically, from the very begining, the vesicles are deeply situated in a skin surface that shows no inflammatory reaction. The appearance of the vesicles, especially on the sides of the fingers, have been likened to boiled sago grains. Often the epidermis exfoliates in large sheets, leaving a smooth, red, clean surface. Sometimes the vesicles may increase in size and coalesce to form large bullae, the contents of which soon become purulent. Dyshidrosis may be due to a idiopathic derangement of the sweat gland ducts, or an exactly similar picture may be produced by chemical irritants. Certain medicaments produce a mild form of dyshidrosis, often wrongly called ringworm.

The superficial scaly lesion having festooned borders but not showing any macroscopical vesiculation, found particularly in surgeons, barbers and others who have occasion to apply alcohol to the hands frequently, is not to be confounded with ringworm.

Of course, the demonstration of the parasite makes the diagnosis absolute, but this is not always possible, and often entails many hours of search. The best method of examining the scales is as follows: the tops of the vesicles or a piece of macerated skin are placed in a watch glass containing 30 per cent potassium hydroxide solution and allowed to come just to boiling over a Bunsen burner. Then the preparation should stand for one-half to four hours depending on the thickness of the specimen. The scales are then placed on a slide and examined with the low power of the microscope. The parasite appears as long or short, wavy, undulating mycelia segmented at irregular intervals. (See Fig. VI).

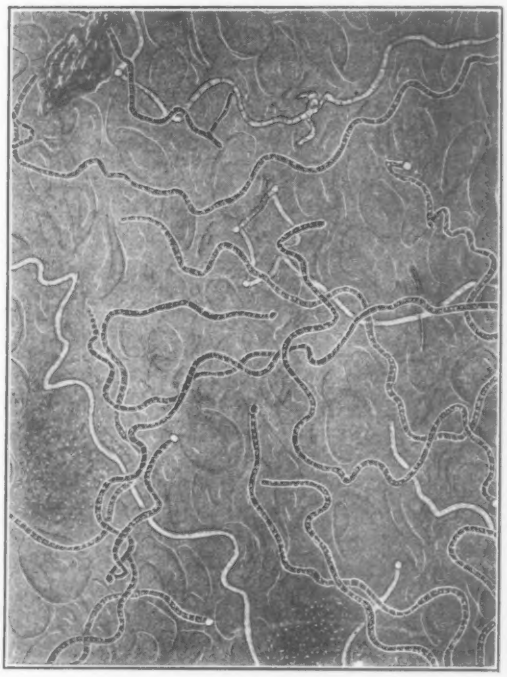

Fig. 6—Appearance of mycelium in scales (from feet). Prepared in 30 per cent KOH (1 to 350).

At the present time the practitioner has been well educated in regard to the possibility of ringworm infection of the hands and feet. Personally, I believe that we are now diagnosing too many eczematous and dyshidrotic lesions as ringworm. This statement is brought out by the fact that the treatment, instead of being palliative, has been anti-parasitic, and the results are always disastrous.

Treatment

Type I, or the ordinary lesion on the uncovered parts, responds readily to application of one-half strength tincture of iodine applied several times daily.

In type II, eczema marginatum, best results are obtained by using a 1 per cent solution of iodine in 70 per cent alcohol each morning, and an ointment containing one part of salicylic acid and one part of benzoic acid to 30 of lanolin and vaseline at night.

In treating the feet, more energetic measures are necessary. In addition to using the 1 per cent iodine solution and the benzoic-salicylic ointment, as above, the lesions should be curetted with a dull instrument at each visit to the physician. Again, I always advise the patient to get a pumice stone and remove all the dead skin possible each night. There is no use applying medicines to thick crusts or macerated skin which serve as a perfect protection to underlying parasites.

In addition to the above, if available, X-ray in doses of one-eighth erythema dose twice a week greatly shortens the course of the disease. We do not know just how the X-ray works here, but the results speak for themselves.

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A STUDY OF THE ACTION OF THERAPY IN NEURO-TREPONEMATOSIS.

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Associate in Syphilology, Medical College of Virginia.

I am firm in the belief that the methods in use today in the treatment of neuro-treponematosis with salvarsanized or auto-salvarsanized sera has little or no specific action, due to the infinitesimal amount of the drug, and, further, in the case of re-enforced serum the drug has not developed the treponemicidal value that it does after having passed through the portal circulation, where it has at least been metabolized, thus bringing about the activation necessary for the destruction of the organisms. It is generally known that treponemata may survive for many hours in a solution of arsphenamine far in excess of any that might be sustained by the human body.

As to tryparsamid, it has no treponemicidal action, as evidenced by the fact that no effect is had upon primary or secondary lesions, the organisms remaining in the lesions as without tryparsamid. Malaria inoculation can have no specific action because the fever can be induced to the same degree by many methods, and protein injections as such have no action upon the symptoms. A toxemia of some type is usually present in paretics, with the symptoms continuing as before.

Whether after aseptic injuries of the brain there may be regeneration is still a mooted question, but the work of Strausler and Koskinos[1] after the examination of thirty-eight brains following undoubted congestion, and disease processes with more or less actual destruction, seems to give conclusive evidence

A. Very slight hyperemia following re-enforced spinal fluid injection.

that regeneration does occur, thus: Six months after an artificially induced malaria, given therapeutically in general paresis, "the meninges are found slightly thickened, the vessels normal, and without perivascular infiltration. The cortical laminae are normal in width, and the cyto-architecture is undisturbed. There is richness in the nuclei of the zonal layer but glia proliferation is absent. Rare infiltrating cells are found in the cortex, some in the subcortical white matter, and the meninges. They are lymphocytes. Glia proliferation and red cells are absent. In other words, general paralysis is unrecognizable."

As further evidence of the healing process seen from a purely clinical view-point, there may be a complete remission from all neurologic and psychiatric phenomena. Indeed, these remissions make one wonder just how permanent the histo-pathologic picture is.

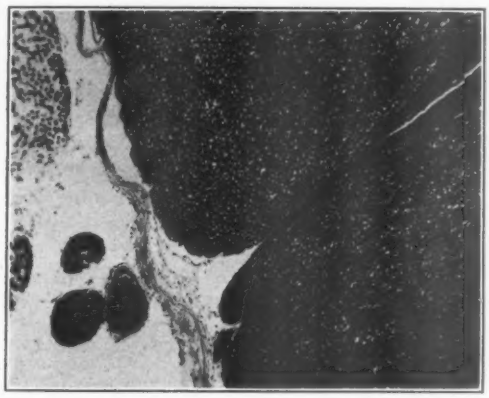
Freeman,[2] basing his observations on fifteen brains following malaria inoculations, states that "except for the reduction in the number

of neurons in the cerebral cortex and marginal gliosis, the anatomic picture does not deviate from the normal."

Assuming the foregoing as correct, and, further, assuming that the small amount of arsenic has no specific effect, and with the thought in mind that the Swift-Ellis technique gives as definite results as the re-enforced serum, we perforce must seek some explanation other than the specific action of salvarsan in the spinal canal. With this in mind, the following work is submitted.

Following therapeutic malaria in general paralysis, Gerstman[3] has this to say: "At first the malaria accentuates the inflammatory reaction, giving rise to great exudation into lymph spaces and nerve substances."

Freeman makes the following observation during the early stage of malaria treatment: "The cortex is narrowed and its density increased by the large number of cells present.



B. Moderate hyperemia following air injection.

Blood vessels stand out with great prominence, both because of their size, and on account of their collars of infiltrating cells. It seems as though this marked aggregation of cells in the perivascular space was a manifestation of an organization of an inflammatory exudate."

As to the intra-spinal treatments, both salvarsanized and auto-salvarsanized, we have the following microscopic picture of experimental animal brains: these animals were injected with 1 milligram of salvarsan in 5 c.c. of spinal fluid, and autopsied on the third day, being killed with nicotine on the tongue. The cord shows little hyperemia, advanced degeneration of supporting tissue, and many nerve cells have lost their nuclei. The frontal and parietal lobes and cerebellum show a slight amount of hyperemia—mainly on the surface.

It is interesting to note, following out the idea of cases in which a simple spinal puncture was done that many paretics were greatly improved, that the animals in which 5 c.c. of air was injected into the spinal canal showed more definite changes than with chemicals. In air injected dogs the pial vessels showed hyperemia, while the cerebrum manifested marked hyperemia along the surface and sulci.

After intravenous injections of tryparsamid, the cerebrum shows marked and definite hyperemia along surface and sulci. The vessels are distinctly engorged. In the cord, pial vessels show hyperemia, and some hyperemia is noted in the interior of the gray matter. These findings are in keeping with what we might expect following the injection of about 1 Gm. of arsenic, because, as Sollman[4] observes, "after arsenical intoxication there is an increased permeability due to the relaxation of the walls of the capillaries, and consequently by changes similar to those of inflammation." This is further borne out by the encephalitis and optic neuritis so often seen following the injection of tryparsamid.

Conclusions.

It would seem, in view of the foregoing findings, that all special therapy in the treatment of neuro-lues has the one action—that of the induction of hyperemia in the brain and cord,—and this in turn brings about what one would naturally expect, a regeneration. The degree of hyperemia parallels the positive clinical results we have obtained.

Practical Application.

With the induction of hyperemia as the working hypothesis, the following cases are reported:

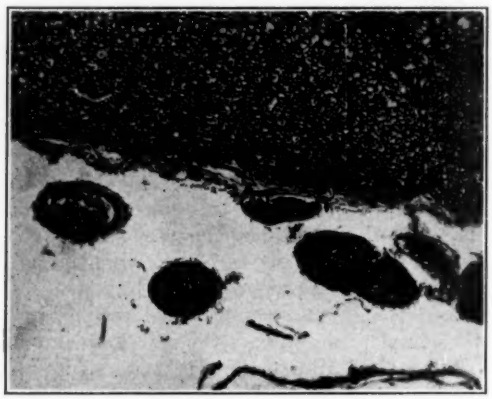
J. M., age 37; salesman. Has been depressed for 18 months. Delusions of persecution. Thinks wife is to be harmed by visitors. Unable to get along with employer or customers. Judgment very poor.

Blood Wassermann 4 plus; spinal fluid 4 plus; globulin 2 plus. Upper zone curve. Diagnosis—general paresis.

Patient was given four injections into spinal canal at weekly intervals, consisting of 10 c.c. of air as measured in volume by the syringe.

At the same time 10 c.c. of spinal fluid was removed.

Two months later, this patient saw life optimistically, with no delusions or hallucinations. He was then working regularly and his employer stated he was very efficient. Ten months afterwards, there had been no recurrences, the patient was happy and contented,



C. Marked hyperemia following tryparsamid injection.

and his associates saw no deviation from his former normal condition.

Knowing the definite hyperemia produced by the Noguchi test, I applied this working knowledge to the cord and brain, with the results as seen in four cases.*

These cases were given .05 c.c. in the spinal canal, and were worked up to .5 c.c. There were no reactive phenomena, and these patients were in about the same condition after injections as before. The material injected was killed treponemata, finely ground, in a menstrum of saline and trikresol.

J. W.; age 27; laborer. Wassermann on spinal fluid and blood, positive; globulin 2 plus. Cells 53. Upper zone curve.

Patient is inarticulate, disoriented, and remains in bed without any voluntary movement. Involuntary passage of urine and faeces. Simply a vegetating organism. Diagnosis—general paresis.

Two intraspinal injections of Treponemata were given at weekly intervals. Condition of this patient at end of two weeks is markedly improved in that he is oriented, knows his name, knows his home address, walked up to the third floor to operating room, takes food voluntarily, and has gained in weight.

Jas. McR.; age 32; cook. Wassermann on blood and spinal fluid, positive. Upper zone curve. Cells 12.

Patient is exicited, with paranoidal symptoms. He has millions of wives, millions of dollars, and race horses. He followed the Christ because he was greater than the Christ. He is King of Kings, owns the hospital, and I am his humble servant. Diagnosis—general paralysis.

Three injections of Treponemata were given at one week intervals. Patient has improved to the extent that he has only one wife, and not much money. Is oriented, knows name and address of his wife and relatives. Is tidy and quiet, well-behaved, and has gained in weight.

S. T.; age 23; driver. Patient has positive blood and spinal fluid. Upper zone curve. Globulin 1 plus. Cells 23.

This man is disoriented, markedly depressed, inarticulate, and very filthy.

Two injections of Treponemata were given at five day intervals. After two weeks patient is oriented. Answers ordinary questions intelligently, is active about the wards, eats regularly, and has made marked gain in weight.

R. T.; age 52; laborer. Upper zone curve; 17 cells; positive blood and spinal fluid; globulin 2 plus.

Patient is very much depressed. Answers no questions with any degree of intelligence. Disoriented as to time and place. Void of all judgment or conception of honor.

Two injections of Treponemata. There is no improvement in the mental picture of this case, although there is definite gain in weight.

Summary.

In a series of four cases with definite improvement in seventy-five per cent, this mode of treatment, with further observation as to dosage, bids fair to be utilizable in the treatment of neuro-lues.

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Medical Arts Building.

*From the Service of Syphilology at the Central State Hospital, Petersburg, Va.
Treponemata emulsion furnished through the courtesy of Lederle Antitoxin Laboratories.

THE CARE AND REPAIR OF THE CERVIX AND PERINEUM IN CONFINEMENT CASES.*

By ROBERT P. KELLY, M. D., F. A. C. S., Lynchburg, Va.

As a native of Southwestern Virginia and a former resident of Bristol, it is a great pleasure to me to attend a meeting of the Southwestern Virginia Medical Society and to have the honor of addressing its members. I have tried to choose for this occasion a subject that would be of interest and importance not only to the specialist in my own line, but to the general practitioner as well. Such a topic, it seems to me, is "The Care and Repair of the Cervix and Perineum in Confinement Cases."

The care of the cervix and perineum during child-birth and their subsequent repair are at the same time one of the greatest and the most frequently neglected responsibilities of the obstetrician. There is perhaps no other one thing that so impairs the health of child-bearing women as the injuries to the cervix and perineum, and the neglect or imperfect repair of these injuries, the too frequent result being a life of physical discomfort or actual suffering. Many operations may be necessary later to partially restore health, whereas the proper treatment at the time of delivery would have obviated all bad results.

As a general practitioner, I do not believe anything gave me more worry and trouble than the repair of cervical and perineal lacerations, and many of my patients doubtless suffered as a result of my inability to make the necessary repairs.

It is my earnest desire to contribute to the prevention of these injuries by directing the general practitioner's more careful attention to this important branch of obstetrics.

I feel that it is the duty of every obstetric specialist to do all in his power to aid the general practitioner in the care of confinements, and what I may say regarding our short-comings in this respect is not intended as a reflection on any other physicians, but is rather a frank admission of my own imperfect work during my twelve years of general practice.

No one has more sympathy than I for the general practitioner who must deliver his cases in the home, with inadequate help and without the facilities of a hospital, but I do feel that practically all of these injuries, certainly the most serious ones, can either be prevented or properly repaired if we are just a little more careful and if we familiarize ourselves with the correct methods of delivery and repair.

First, let us consider the cervix,—the causes, the prevention and the repair of its injuries.

As a rule, the cervix will not be injured in child-birth unless the baby is delivered before dilatation is complete. This statement cannot be too strongly emphasized.

The chief causes of cervical injury are the following:

1. Manual dilatation.
2. Pituitrin before the baby is born.
3. Too early application of forceps.
4. Versions and breech extractions before complete dilatation.
5. Versions following bag-inductions (since no bag, as a rule, will completely dilate a cervix).

We will discuss briefly each of these points.

1. Manual dilatation: As DeLee says, "Manual dilatation means manual laceration." In no case can the cervix be dilated by hand without injury, and such efforts are not only futile but also invite infection, which may prove fatal. There is no more pernicious habit than "aiding" labor by manual dilatation.

2. Pituitrin before the baby is born: I am glad, indeed, to have this opportunity to condemn the use of pituitrin before the baby is born. I do not believe anything contributes so much to cervical injury as the use of this drug to accelerate delivery in so-called uterine inertia cases. It is often not uterine inertia, but his own impatience that induces the physician to resort to this powerful, most dangerous drug. It is frequently given before complete dilatation, causing both cervical and perineal injury and occasionally ruptured uterus. In addition to this, the baby may suffer cerebral injury, convulsion and death.

I can not better emphasize this point than to quote again from DeLee, who says: "'Tis criminal to give pituitrin while the baby is in the uterus."

My opinion is that this drug has actually done more harm than good, due to its indiscriminate use. However, it does have a place in obstetrics when properly used, being of great value when given immediately after the birth of the baby's head, to control hemorrhage in the third stage of labor and to expedite the process. In this case, as soon as the

*Read by invitation before the Southwestern Virginia Medical Society at Bristol, Va., September 22, 1927.

placenta is delivered, a hypodermic of aseptic ergot is given. This is our routine for obstetrical cases at both the Lynchburg and the Virginia Baptist Hospitals.

3. Too early application of forceps: This is another cause of cervical injury, probably equal to that of pituitrin and, often, more disastrous to both mother and baby. I know of no more important thing in forceps deliveries than to be absolutely sure that dilatation is complete. In consultations, I have seen a number of cases in which forceps applications and attempts to deliver were made before dilatation was near completion, and in some of these cases I have found the baby dead, and have later seen the mother die.

The rule should be, generally, not to use forceps until the patient has been completely dilated (in the second stage) for one hour without progress, and not then if the operator is not absolutely sure of what he is doing and how to do it. It is much more to his credit to call for help, divide the honors with some one else and thereby bring more honor to himself.

In this connection, it does not seem out of place to mention the conditions necessary for a successful forceps delivery. They are as follows:

a. The head must be engaged.
b. The membranes must be ruptured.
c. The cervix must be completely dilated. (In an emergency, Duhrssen's incisions may be employed.)
d. The position of the head, i. e., the relation of the diameters of the baby's head to those of the mother's pelvis must be definitely known and proper application must be made.
e. The patient must be surgically prepared and anesthetized.
f. The baby must be alive.

If these rules are strictly observed, there will be no cervical injury, though we should bear in mind the fact that a forceps delivery is a major operation.

4. Versions and breech extractions before complete dilatation: This is a frequent cause of cervical laceration, and the remedy is quite obvious.

5. Versions following bag inductions: The largest bag will not completely dilate most cervices, and seldom in the case of a primipara does it do so. This is, therefore, one of many objections to the routine delivery by the use of bags and versions.

As we are discussing in this paper the maternal injuries produced by these errors of delivery, no reference has been made to the baby, but it is frequently injured too, sometimes fatally, while these maternal injuries are being inflicted.

Following any operative delivery, the cervix should be very carefully inspected and, if injured, immediately repaired. I wish to emphasize the word, "inspected," for in no other way can we know whether or not we have a cervical laceration. The sense of touch is not sufficient.

The repair of the cervix is usually done with interrupted, No. 2, 20-day chromic cat-gut. Occasionally I use a continuous suture, a method which I accidentally discovered in repairing old cervical lacerations. In such cases it is more often applicable than in the recent ones, due to the very much thinned cervix in the latter.

The technique of the continuous method is as follows: The V-shaped, denuded area having been made, the suture is started at the apex of the V, including only the muscle. It is tied and the end left long. With a second needle this "end left long" is then run through the peritoneum of the cervix. The other end of the suture, on the first needle, is then carried forward, including only the muscle of the cervix, until the closure is complete. The last stitch is carried out through the peritoneum and is then continued back to the starting point, completely burying the muscle suture, making a very smooth and secure approximation, and is then tied with the other end of the suture, which was previously arranged for this purpose, leaving only one knot in the entire line of suture. This plan makes a much more secure union and one less likely to become infected; it also puts the only exposed knot away from the end of the cervix where it is better protected. Where the cervix is extremely thin this method can not be used, the interrupted suture being better.

We will now consider the perineum.

Many of the causes of injury to the cervix also effect the perineum.

Whenever I hear a physician say he has delivered a baby, especially a forceps case, without perineal injury, I am inclined to question the statement, for it can rarely be done. He

may be very sincere in his claim, but, perhaps, not sufficiently careful in his search for injury.

In taking histories of patients who have borne children, who state that no lacerations have occurred in former births, I am frequently shocked, on examination, to find a large cystocele or rectocele, the patient frequently being entirely ignorant of the existence of such a condition.

To simplify the discussion of this very important subject, I shall use the following classification:

1. Prevention of perineal lacerations.
   a. By anesthesia. b. By episiotomy.
2. Repair of recent, or fresh, lacerations.
3. Repair of episiotomies.
4. Repair of old lacerations immediately following delivery.

1. Prevention of perineal lacerations—by anesthesia: Occasionally it is possible to deliver a baby for a primipara without tearing the perineum or the vaginal mucosa. The feat can be accomplished in only one way, as I see it. The patient is given anesthesia during her pains until, with the pain, a large part of the baby's head is visible, or until one feels sure that the head has advanced to such a point that it can be held and prevented from receding by pressure on the abdomen against the fundus, and until also, the delivery can be controlled and completed by such pressure, provided the patient is completely anesthetized. When the head has advanced thus far, the anesthesia is pushed a little more *in this way*. At the next pain the patient is requested to breathe very fast, to "pant like a dog," and in a few seconds anesthesia is complete, when the head may be very easily and gently pushed through, either by one hand of the operator or by an assistant. This method is particularly good in multiparae, and usually gives good results, but frequently, in the case of a primipara, one is disappointed to find a pretty ugly laceration, which, he realizes, could have been prevented by an episiotomy, to which I refer as the second means of preventing perineal injury.

It is only by a rather extensive experience with episiotomy that one is finally convinced that this operation is one of the most valuable aids to obstetrics. However, on the repair of the episiotomy depends the result. To this I shall refer below. Let me say, however, that, in my opinion, this procedure, properly executed, will do more to preserve the perineum than anything else we can do. In addition to this, it will save babies by shortening the second stage of labor; it will often make forceps unnecessary; it will render easy manual rotation of the head in forceps deliveries; it will reduce traction on the head, thereby minimizing cerebral injury in forceps delivery; it will render less difficult and less hazardous breech deliveries; it will leave a woman still a primipara, so far as her perineum is concerned; it will prevent prolapse of the uterus, cystocele and rectocele, and, finally, it will make wholly unnecessary secondary perineal repairs.

2. Repair of lacerations: To make a perfect repair of the perineum is, I think, in many cases, one of the most difficult operations we are called on to perform. Often it is next to impossible to find and approximate the various tissues which should remain intact, though, in the majority of cases, by very careful effort we can make a reasonably good repair. In doing this, there are several important things to bear in mind. The majority of such injuries are closed by a number of so-called "through and through" sutures, or stitches, going in on one side of the wound, in the skin of the perineum, running the suture deep, to the bottom of the tear, and coming out on the other side, where they are tied. In this way, the skin, with fascia, is approximated, and may have a very nice appearance, but what of the vaginal mucosa, the sphincter cunni, the urogenital septum and the levator muscle? One or all of these very important structures may have been missed by this method of suture, and practically always the levator is lost. Nor is the vaginal mucosa sutured, so that the lochia may flow into the wound and probably cause infection.

There is only one way, in my opinion, to repair these injuries. First, the vaginal mucosa must be closed. This should be done by a continuous, No. 2, 20-day chromic cat-gut. This suture may be put in submucously, if desired, and, so used, is better. The character of the laceration may govern this. This suture is continued out to the muco-cutaneous junction. Unless it is already submucous, just at this point it must be made so. It is then used to approximate the sphincter cunni muscle. This is best done by using tissue forceps to elevate the cut edge of the skin, and then,

with a sort of hook-stitch, going upward on either side, and pulling down the retracted muscle. This restores the original vaginal opening, and only by this method is it possible to do so. The end of the suture is left long and clamped, for the time being, and laid on the patient's abdomen.

Assuming that the levator is torn, we then, with two Allis clamps, "fish out" this muscle on either side. The next step is to cover the left hand with an extra glove, known as a "perineorrhaphy glove." The fore-finger of the left hand is then passed into the rectum to act as a guide to the passage of the needle and to protect the rectum from injury while the levator is being sutured. This I consider quite important. In fact, I do not think such a repair should ever be attempted, or can be properly and safely done, without this precaution. Having done this, one, two, or three, interrupted, No. 2, 20-day chromic cat-gut sutures are put into the levator muscle, going quite close to, but not, of course, entering the rectum. These sutures are not tied as put in, but are caught with clamps and held until the last one is inserted and the finger withdrawn from the rectum. The perineorrhaphy glove is then taken off the left hand by an unsterile nurse and the sutures are tied and cut. The urogenital septum is then sutured with a continuous No. 2, 20-day chromic catgut. At this point, this suture is tied with the original vaginal suture, which was left long for this purpose, the short end cut off and the long end used to close the fascia, finishing at the vaginal end. This same suture is then locked and used as a subcutaneous to approximate the skin. At the lower end of the wound it is thrust deep in the perineal fascia and made to emerge about two or three cm. to right or left of the point of entrance, depending, of course, on which side of the wound the suture was last passed.

Instead of using the cat-gut for the skin, this suture may be tied with the original vaginal suture, after first closing the perineal fascia, and a subcutaneous silk worm gut may be substituted for the skin, starting just inside the vagina and finishing as described for the subcutaneous cat-gut, both ends being left long or loosely tied together, if desired.

3. Repair of episiotomies: I do all my episiotomies on the patient's left side, beginning at the lowest point in the mid-line, going out at an angle of about 120 degrees. This has the advantage over the mid-line episiotomy in that it is away from the rectum, and, therefore, prevents injury to the sphincter ani in case of an extension, which, however, is rare if the episiotomy is sufficiently deep.

Just here I would like to digress a bit from the subject to mention one very helpful point in determining whether or not to do an episiotomy in a given case. What I have in mind is the bleaching of the perineum around the baby's head. When this occurs, a tear is usually inevitable and an episiotomy is indicated.

The repair of episiotomies is done in exactly the same way as the repair of lacerations, step for step, making it unnecessary to go again into the details of the operation. The vaginal suture I usually put in submucously. The perineorrhaphy glove is always used. Formerly, I used silk worm gut for the skin, but for two years I have used cat-gut, and the patients have had no infections and have been more comfortable.

Should the patient return for a second confinement (and occasionally one does), a second episiotomy is done in the line of the old scar, if that can be seen, though it frequently can not.

The more I have done this operation the more I have realized the value of it. I know of nothing which does so much toward preserving the health of women as this method of treating the perineum during delivery. Furthermore, I am sure that no patient on whom I have done an episiotomy in the past four years, had had or needs a perineal repair. On the other hand, seldom does a week pass that I do not see one or more patients, who have absolutely no perineum, the result of previous child-birth.

Repair of old lacerations immediately following delivery: Up to a few years ago many obstetricians advocated the postponement, from a few days to weeks, of repair of perineal lacerations, and no one ever considered for a moment the repair of an old laceration immediately following delivery,—the reasons given for the delay being, among others, that the chances of the infection were too great and that bleeding interfered.

A few years ago I held an appointment in a maternity hospital where we were required to repair all old lacerations as soon as the

delivery was completed. I was shocked, at first, having never dreamed that such a thing could be successfully done. Now, scarcely a week goes by that I do not perform one of these operations. I have been doing this for years and, so far, the results have been uniformly satisfactory.

In favor of the operation at this time, the following points may be cited: 1. It can be just as safely and just as easily done. 2. The tissues are more vascular, and, I think, as a result, heal better and take care of infection better. 3. The patient needs the operation, has needed it for years, perhaps, and probably would not consent to it at some future time. 4. The additional anesthesia is almost negligible. 5. The patient is saved the suffering, the time and the expense of an operation at some future date. In fact, you save her, by operating at this time, more than your fee for the combined delivery and repair. 6. The stay in the hospital is not prolonged, these patients going home on the eighth or ninth day, as all my cases do, unless something unusual develops.

This operation is done practically the same way as the perineal tear and the episiotomy, the only difference being the dividing of the muco-cutaneous border from left to right and separating the vaginal mucosa. To do this, we simply get the points on the two sides, with two Allis clamps, and put the perineum "on the stretch" between the clamps. The incision is then made by trimming off the border, from the left to the right clamp, or the reverse, if desired; the vaginal mucosa is then stripped back with the gauze-covered fore-finger. In doing this with the finger, the rectum will not be injured, but should any cutting of the tissues be necessary, this organ must be carefully protected. The superfluous vaginal mucosa is trimmed away, leaving a V-shaped area, the angle of the V being to the back. Any ragged edges are smoothed up, and a No. 2, 20-day chromic cat-gut, continuous suture is used to close the vaginal mucosa, beginning at the angle of the V, continuing up to the muco-cutaneous border, where it is made submucous, the end left long being clamped and laid on the patient's abdomen for future use. After the levator sutures are put in, the urogenital septum is then sutured with a continuous cat-gut. The original vaginal suture, that has been used to bring together the sphincter cunni, is tied with the perineal suture to which I have just referred. The shorter end is then cut off, the long end being used to close the subcutaneous fascia, locked at the vaginal end of the skin incision, and used as a subcutaneous to approximate the skin.

In all these operations it is well, after the subcutaneous suture is finished, to take a number of Allis clamps and pinch together the edges of the skin wound until the patient's legs have been taken out of the stirrups and put together, when the clamps are removed. This tends to act in the same way as skin clips, hence insuring better approximation of the edges.

Instead of the repair of the perineum, as described above, with cat-gut throughout, there is another method which I sometimes use and which is somewhat simpler and quicker. It is done as follows: The vaginal mucosa is sutured, as usual, with continuous cat-gut, carrying the suture out to the skin border and leaving it long for future use. Then, the levator, urogenital septum and skin are brought together with three or four or more figure-of-eight silk worm gut sutures, the first part of the 8 including everything except the subcutaneous fascia and skin, and the last part of the 8 including these structures. This is a simple and easy method of repairing episiotomies and lacerations, and is advisable until one becomes more experienced with the cat-gut method. The sutures should not be tied tight; if so, they will cut out. There should be from a quarter to a half inch space between the skin edges, when tied. This method is also preferable if any danger of infection exists.

In conclusion, I wish to repeat that I consider it our duty to pay more attention to the care and treatment of the cervix and perineum in our confinements. By so doing we will not only save our patients much discomfort and ill health, but also heavy expenditures for hospital treatment that they ought not to require.

To do a good perineal repair requires more knowledge, skill and time than an appendectomy, and the fee for such an operation should be just as much, or more.

Unless we can properly repair these lacerations, we are but little, if any, more efficient than the mid-wife; and certainly no one should

undertake obstetrical cases who is incapable of doing a reasonably good perineorrhaphy.

We obstetricians, who claim to know something about these repairs, should never lose an opportunity to impart such knowledge as we may possess to the general practitioner. I feel that much may be accomplished by this means.

Finally, if we do well our part as obstetricians, the gynecologist will have more time to play golf, the mothers will fear less the agonies of child-birth, there will be more babies born into the world and the pockets of the obstetricians will be overflowing.

SINUS DISEASE—ITS RELATION TO GENERAL OR SYSTEMIC CONDITIONS.

By WILLIAM LAWRENCE GATEWOOD, M. D., F. A. C. S., New York City.

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It is the firm belief of many investigators that certain constitutional disorders have apparently been caused by suppurative disease in the paranasal sinuses. Some of these constitutional disorders can often be traced to childhood when sinus disease began. Schaeffer has pointed out that the ethmoidal as well as the sphenoidal sinuses (and perhaps frontal and maxillary sinuses) can "become the seat of pathological processes" as early as the third year. The writer has had under his observation well authenticated cases of cardiac disease, nephritis, arthritis, bronchitis, erysipelas and psychoneurosis in which he feels definitely positive that the cause resulted from disease of the paranasal sinuses.

Every one who has had much experience with children can recall a case in which there is acute illness with high fever, leucocytosis, vomiting, loss of appetite and headache, in which suppurative disease of the nasal sinus is the only discoverable cause.

Chorea with heart involvement has frequently been successfully combated by treating an existing paranasal sinus infection.

Herpes zoster over the first division of the fifth nerve has been found to accompany acute suppurative disease of the sphenoid. It is the belief of many that one of the most frequent and most serious of the systemic manifestations of sinus infection in children is acute parenchymatous nephritis and that when the sinuses are cleared up all evidences of nephritis promptly disappear.

In a recent review of the subject, Dean enumerates a great number of conditions associated with sinus disease and which are cleared up by removing the sinus pathology. Among these conditions he lists phlyctenular conjunctivitis, iritis, retrobulbar neuritis and choroiditis. He alludes to the possible interdependence between chronic multiple infectious arthritis and paranasal sinus disease in infants and young children. He also believes that the absorption of bacterial protein from an infection of the sinus may be an etiological factor in the causation of asthma in childhood, because they are benefited by the treatment of the sinus infection. Such cases have been reported by Byfield and others.

Pharyngitis, laryngitis and bronchitis, particularly in children, are often the end results of paranasal sinus disease. Osteomyelitis of the bone surrounding the diseased sinus may occur. Other conditions reported from time to time are cavernous sinus phlebitis, meningitis, brain abscess, periodic vomiting, cervical adenitis, chronic tonsillitis, etc.

Any condition that may result from a focus of infection, especially in children, may result from sinus disease. Among such conditions may be included the following: Cardiopathies, rheumatic fever, chorea, nephritis, pyelitis, certain cases of cyclic vomiting, deforming periarthritis, anemia, anorexia, malnutrition and chronic digestive disturbances.

Paranasal sinus diseases of a chronic nature produce listlessness, poor appetite, underweight, poor color, in short, the condition so commonly observed in children and young adults who have hypertrophied and infected tonsils and adenoids.

In view of the fact that accessory sinus disease is a very common finding in patients suffering with bronchial asthma, many investigators have suggested that there is an etiological relation between these two diseases. Gottlieb suggests four possible ways by which the symptom complex called asthma may be produced through nasal disease. Mucopurulent material may drip into the pharynx from an infected sinus and the infection gradually involve the mucous membrane of the trachea and bronchi. Mucopurulent material may be retained in a sinus and the toxic products be absorbed through the blood stream or lymphat-

ics or both and produce allergic phenomena that may manifest themselves in asthma. The nose may be obstructed by polypi and enlarged turbinates, and the patient is compelled to breathe constantly through the mouth and the effect of cold and dry inspired air, combined with the presence of infected material on the sensitive mucous membrane of the trachea and bronchi, might conceivably be the exciting factor in the production of bronchial asthma. Finally, a spasm of the musculature of the bronchi might be produced through nerve reflex by irritation or disease of the nasal ganglion.

Sluder explains the asthma of nasal origin by stating that the path of impulses is from the nasal ganglion through the median, upper, middle and lower cervical and first thoracic ganglia, through the last two of which pass the heart and lung fibers.

Dennis reported twenty-eight cases of asthma out of sixty patients having accessory sinus disease and Gottlieb reports thirty-one out of a series of 117 carefully studied cases of paranasal sinus disease.

In conclusion the writer wishes to urge upon the profession the extreme importance of a careful examination of the sinuses in all patients with a condition originating from a suspected focus of infection. With regard to the tonsils and teeth, an examination of these structures is usually carried out in a routine way, often with negative findings, while the accessory nasal sinuses might easily be the contributing or sole cause.

330 *Park Avenue.*

THE DIAGNOSIS AND TREATMENT OF TOXIC GOITER.*

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We believe with Plummer that toxic goiter should be divided into two groups, the exophthalmic goiter and the toxic adenoma. Inasmuch as the problems of diagnosis and treatment are largely with exophthalmic goiter, more consideration will be given to that type of the disease.

Exophthalmic goiter is a constitutional disease. We must admit that our knowledge of it is still quite limited, and that what we do know is largely limited to the thyroid gland and the effects of the hyperthyroidism. The course of the disease is well known, it runs in cycles of greater and less intensity and if untreated tends to be self-limited by actual destruction of thyroid tissue. When left to run its own course, however, it takes its toll of high mortality and leaves in its wake great morbidity from the damage to the nervous system and the cardio-vascular-renal systems. It is seen usually in young adults, most often in the early thirties, and is much more frequently found in women than in men. Tremor, tachycardia and nervousness are the early symptoms followed by loss of weight, enlargement of the thyroid gland and exophthalmos.

Toxic adenomatous goiter is also found more frequently in women than in men. They are ten to fifteen years older than the exophthalmic patients and are therefore at an age when the heart, blood vessels and kidneys may already be impaired. They have had adenomatous goiters for many years without symptoms and gradually become nervous, develop tremor, lose weight and usually notice an increase in the size of the formerly quiescent goiter. This form of hyperthyroidism does not run in cycles but tends to become progressively worse. The picture is largely that of hyperthyroidism produced by feeding excessive amounts of thyroid extract, and exophthalmos is never seen in such hyperthyroidism.

Rarely we see a patient with a nodular goiter in the hyperthyroid state with exophthalmos. Broders has found the typical picture of exophthalmic goiter in glands from such patients outside of the areas of adenomata. This seems to explain satisfactorily the discrepancy for there is no reason to suppose that the presence of an adenoma would in any way prevent the development in the same gland of exophthalmic goiter.

We know very little of the cause of hyperthyroidism. We do know that powerful emotions may initiate exophthalmic goiter, and that upper respiratory infections, particularly in the tonsils and the nasal accessory sinuses, have a very decided influence in the onset of the disease. It is very difficult to understand the part played by iodine in the onset of this disease. The lack of iodine cannot be a major item because exophthalmic goiter is almost as frequent in non-goitrous as in goitrous districts, yet the favorable influence of iodine ad-

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ministered in the course of the disease is significant of a vital role.

We may regard the toxic state with an adenomatous goiter as an over-production of thyroid secretion. The diseased gland for years has put out a deficient secretion and the effort on the part of the body to increase the secretion is overdone.

The thyroid pathology of the two types is quite different. In exophthalmic goiter there is a general enlargement of the whole gland. There is a cellular hyperplasia resulting in papillary projections into the acini and a lack of the colloid usually present in the gland. In the later stages there is a marked increase in the fibrous tissue stroma which finally may result in relief of the hyperthyroidism, though the patient in the meanwhile may have been wrecked by the disease. It is interesting to note the different pictures seen in the exophthalmic gland since the administration of iodine to these patients. There is still a marked hyperplasia and increase in the size of the cells, but there is a very considerable amount of colloid present and it appears not unlike the colloid goiter.

The adenoma is a true blastoma. It may be single or multiple; by its growth it impairs the normal thyroid tissue, and finally by hyperplasia of individual cells it forms an excessive amount of thyroid secretion.

The pathology outside of the thyroid gland is much the same in the two types. From the excessive activity of all tissues there is a degeneration of the heart and blood vessels, with the usual effect of such degeneration on the kidneys. There has been no satisfactory explanation of the exophthalmos.

The diagnosis of well-advanced hyperthyroidism, whether due to exophthalmic goiter or toxic adenoma, presents no difficulty. The problem with these cases is to determine the extent of the damage done by the excessive thyroid stimulation to the various tissues of the body, particularly the heart. The cases which are seen early when they are near or on the border line are the ones which require the best judgment before proceeding with treatment. As a rule, the early exophthalmic goiter is more likely to be confusing than the toxic adenoma.

The patient with toxic goiter may present a group of symptoms so numerous as to confuse the student of the disease. Many of these symptoms are quite constant among patients afflicted with hyperthyroidism, but most of them are not reliable and may be considered lightly. I refer to such vasomotor disturbances as excessive sweating and flushing of the skin, the diarrhea and the painful extremities. The diagnosis depends, in the final analysis, on the six cardial symptoms and signs, namely, nervousness, tremor, loss of weight, tachycardia, exophthalmos and goiter.

The first of these symptoms is of a very indefinite nature; a large proportion of sick people will call themselves nervous and many may appear even as having hyperthyroidism. The nervousness of true hyperthyroidism, however, is violent in nature; the patient has the fidgets constantly to such an extent that the perpetual motion of the arms and legs, especially when the patient is confined to bed, will chafe the skin of the elbows and knees even to ulceration.

The tremor is also difficult to evaluate, but when the fingers are extended the true tremor appears as a rapid motion with short excursion, usually in a lateral direction. The tremor of the exophthalmic patient is more constant than that of the toxic adenoma.

Loss of weight is more definite; we consider it to mean a decrease of at least 5 per cent of the body weight.

Tachycardia can also be expressed in figures. The pulse rate should be considered only with the patient completely at rest, and to be significant it should be 90 or more to the minute.

Exophthalmos is usually easily distinguished from normally prominent eyes; the opinion of the patient or her relatives should be given consideration. It is further confirmed by widening of the palpebral fissure, lagging of the upper lids on excursion of the eyes, and failure of the eyes to converge for near vision.

The presence of goiter is a positive sign and is confused only by the fullness or the prominence of the gland in thin females. The goiter of the exophthalmic type is frequently not large but it is almost always quite firm to feel. The adenomatous goter is usually larger and nodular.

The study of a case with regard to thyroid function is, of course, now, incomplete without the determination of the basal metabolic rate. We now have records of 3,000 tests on about 2,000 patients, and I feel safe in asserting that it is rare that the result of the test

is used as a deciding factor in the positive diagnosis of hyperthyroidism. I do not intend to convey the impression that it is not useful, for as a confirmation of our clinical observations it is most helpful and at times it is an important factor in ruling out the hyperthyroid state. The close relation of the basal metabolic rate to the basal pulse rate is quite striking. This test is further very useful in determining the course of the disease both as to the stage of the hyperthyroidism and the result of treatment.

The test is useful only when done by a well trained individual, and even then the result of a single test should be given weight only when it is in line with the clinical picture. A presentation of the technical difficulties and sources of error has no place in this discussion. I will only remind you that in the apparatus in general use a loss of gas through leakage gives a high rate, while gas added to the respiratory chamber gives a low rate. Manifestly it is easy to lose gas through a leaking machine, so that the common error is to get a rate too high. It is almost impossible to add gas to the chamber, so that the rate is practically never too low. We believe that no case of true toxic goiter can have a normal basal metabolic rate, and we feel no hesitation in ruling out hyperthyroidism when the test properly and repeatedly done gives a normal rate. On the other hand, repeated elevated tests may leave us still in great doubt of the existence of hyperthyroidism.

On account of the many factors which may make a rate higher than it should be, we believe that for practical consideration the upper limit of normal should be above the usual plus 10. We, therefore, do not consider rates between plus 10 and plus 20 as being of clinical significance.

The cases which require the greatest care are the early or border-line exophthalmic goiters and those early or late with other pathology coincident with or due to the hyperthyroidism.

To make the diagnosis of exophthalmic goiter it is not necessary to have present all of the six cardinal symptoms and signs; we feel certain, however, that there must be definitely present either goiter or exophthalmos in addition to the other symptoms. Perhaps 40 per cent of the cases of exophthalmic goiter seen in the average clinic will not have any protrusion of the eyes but there must be a definite goiter. So, occasionally, there may be no thyroid enlargement but definite exophthalmos. I have operated on two patients with this combination and the diagnoses were confirmed by the basal metabolic rate, by the pathological examination of the removed tissue, and by the clinical improvement of the patient after operation. Doubtless there is a very early stage of the disease when neither exophthalmos nor goiter is present. I believe that we should not make a positive diagnosis at this time, though non-operative treatment may be begun. When the diagnosis is in any way doubtful, operation should not be done. In my experience, the best results have been with patients who had the disease in unmistakable form.

It is not the purpose of this paper to discuss or compare the various modes of treatment for toxic goiter. It is my belief that the greatest benefit to these patients comes from the surgical removal of the major portion of the thyroid gland. X-ray treatment certainly has some effect on the gland. The results I believe from this treatment are poor compared to those obtained by surgery. In a limited field, X-ray serves a very useful purpose, as will be indicated later.

While I believe that the greatest relief comes from the surgical removal of the gland, I do not wish to convey the impression that it is purely a surgical problem. On the contrary, the co-operation of a competent medical associate is most important, not only before the operation but for a period of months after the operation.

The casual relation of upper respiratory infection to exophthalmic goiter has been mentioned. Certain very early cases may be entirely relieved by removal of such infection and this may be aided by X-ray treatment. We have had two cases which illustrate this state of affairs. Both were young women presenting early symptoms and signs of exophthalmic goiter. One had badly infected tonsils and the other empyema of the antrum of Highmore; they were entirely relieved by eradication of the infection, followed by rest over a period of several months.

Perhaps the most important part of the surgical treatment from the standpoint of mortality is the preparation before operation. The patient should be put at rest as completely as possible by confinement to bed in the hos-

pital. Excitements of all kinds are avoided and the confidence of the patient in the success of the treatment is encouraged. These people have been sick and harassed; they are nervous and frightened in their new surroundings, and yet it is remarkable how soon their attitudes change, and from a state of fear of the approaching operation they change to one of impatience to have it over. They should have an abundance of good food and water, and an occasional sedative is needed to encourage sleep. An ice-bag over the heart seems to add to their comfort.

The use of iodine in this period was advocated first in this country by Plummer. It is a curious contrast to the teaching of only a few years ago, and is a good example of the instability of medical opinion. It is administered in the form of Lugol's solution, and the dose varies from fifteen to forty drops a day. This introduction of iodine seems to induce a remission of the disease with an improvement in the whole condition of the patient. We use iodine only for the exophthalmic type, but, in view of the possibility of the mixed type of gland, we do not hesitate to use it when in doubt with the nodular goiter. We believe that iodine given to a patient with non-toxic adenoma may have a very positive effect on inducing the hyperthyroid state, but when that condition is established we do not regard the administration over a short period as harmful.

It is quite significant that in recent years when the use of iodine has become so widespread as to be placed in table salt and even in the water supply of large cities, that there is an apparent increase in the number of cases of toxic adenoma.

The administration of iodine to a patient with exophthalmic goiter will induce a remission of the disease but it will not cure it, and when once such a remission is secured by its use it will not succeed so well again. It is, therefore, very unfortunate that its use has become so general, because the patient who comes to operation, after the use of iodine has failed to cure the disease, has lost the beneficial effect of one of the major measures of preparation.

Formerly we were inclined to use digitalis rather frequently with patients whose pulse rate remained rapid in spite of rest in bed even though no signs of decompensation were present. Now we have revised this procedure and use the drug only when there are positive signs of a failing circulation.

It seems wise in a very few cases to "steal" the gland with the patient unaware, so dummy hypodermics and "inhalation treatments" are given them until the selected time arrives when morphine and the anesthetic are given and the operation is done in the patient's room.

Many surgeons have advocated ligation of one or more of the thyroid arteries preliminary to the actual removal of the gland, but since the introduction of Lugol's solution in the pre-operative treatment the number of ligations has been greatly reduced.

The preliminary period in the hospital varies from a few days to several weeks. The operation should not be done until there is a well-marked drop in the pulse rate, nervousness and metabolic rate.

With the adenomatous gland the operation consists in removing the tumors as far as possible, while, with the exophthalmic gland, we remove all of the gland except a small piece on either side consisting of the inner and posterior portions of each lobe.

The choice of the anesthetic is important. I prefer novocaine infiltration alone when the patient is co-operative and pain is slight. Should the patient become frightened or suffer severe pain, a small amount of nitrous oxide gas can be given.

There are a number of complications which may result from this operation, the most important are injury to the recurrent laryngeal nerve, failure of the heart, hemorrhage and acute hyperthyroidism.

Injury to the recurrent laryngeal nerve is avoided by leaving the posterior portion of each lobe and by great care in placing the clamps on the dislocated inferior pole. If the operation is done with local anesthesia, any manipulation of the nerve is immediately recognized by a spasm of coughing, and even with general anesthetic a well-trained team will recognize respiratory changes if the nerve is traumatized. It is in operating on recurrent goiters that the danger of injury to the nerves is greatest, because the gland so adheres to the surrounding structures that gentle manipulation is impossible.

Failure of the heart in advanced cases, where the heart muscle has reached nearly its

limit of exertion, is a grave danger. I believe that such a case is better handled under general anesthesia unless the operation is approached by the patient with a comparatively calm mind. I do not hesitate to send a patient back to bed from the operating room if the excitement is great; the training is a valuable lesson, and the next approach in a few days will be much improved. Removal of only one lobe at a time is a safer procedure with some patients.

After the operation, in spite of the most careful technique, some patients will have a hemorrhage which, retained under the muscles, will cause collapse of the trachea. I have observed this complication three times in about 700 operations for goiter. All of these patients were revived by prompt treatment. The wound should be immediately opened, the clot emptied out and the respiration stimulated by artificial methods, and the bleeding may then be stopped.

The most frequent complication following operation and perhaps the most frequent cause of a fatal termination is acute hyperthyroidism. The post-operative treatment of all cases is designed to combat this condition because all of them have it to a more or less degree. It is usually over in forty-eight hours but this short time may be a hectic one.

When the patient is returned to bed fluids are given immediately by rectum or under the skin according to the severity of the case. We add Lugol's Solution to the fluid given by rectum. An ice-bag is placed over the heart and if the condition of the patient demands it, numerous ice-bags are packed about the body. Water is given freely by mouth and the next day Lugol's Solution. Morphine should be given freely and the patient kept as quiet as possible. When the reaction is severe we give 10 per cent glucose solution intravenously with appropriate doses of insulin. This glucose solution furnishes the fluid required by the body and gives a food ready for immediate use to the organism which is being consumed by the excessive stimulation.

Fortunately the crisis is soon passed, and after about a week or ten days in bed the patient is anxious to leave the hospital.

Considering the severity of the average case of toxic goiter the operative mortality is remarkably low. It is variously reported at from 0.5 per cent to 5 per cent. We have had a mortality of 3 per cent. Practically all the deaths can be accounted for by marked degeneration of the heart although occasionally one will die from some catastrophy.

The prognosis in both types is good. The toxic adenoma will be entirely cured of the hyperthyroidism but the general condition of the patient will depend on the damage done to the vital organs before operation.

We have recently had reports from sixty-seven patients who had been operated on for exophthalmic goiter six months or more ago, fifty-one of these patients (76 per cent) were symptom free and considered themselves well, thirteen (19 per cent) had definite complaints such as nervousness, tachycardia or failure to gain weight; four of the thirteen had hypothyroid symptoms and one of these was markedly myxedematous. These four patients were relieved by thyroid extract. Three patients died from cardiac failure a few months after leaving the hospital. We believe with Tinker that residual symptoms are due to failure on the part of the operator to remove a sufficient amount of the gland. A certain number will have definite recurrence of the disease, I should say it will not be more than 1 per cent.

We have no more spectacular results and no more grateful patients than those who have been operated on for toxic goiter.

THE DIAGNOSIS AND TREATMENT OF CONDITIONS COMMONLY SEEN IN THE THROAT.*

By MORTIMER H. WILLIAMS, M. D., Roanoke, Va.

No doubt many of you, when you read the title of my paper, felt that you were in for another lengthy discourse on the tonsils and the indication for their removal; the literature of which has been both voluminous and adequate. But such is not the case, for I am sure I could add very little to that subject, which has been so extensively considered in recent years by both the essayist and surgeon. Neither is it the object of this paper to add any new surgical knowledge nor settle any disputed points of technique, but rather to bring to mind in a general way some conditions other than tonsillitis that we commonly see in the throat.

Since the recent world war we have been seeing and hearing more and more of Vincent's angina, or trench mouth, which is an acute

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infectious disease, presumably due to the combined action of a spirochaete and a fusiform bacillus, and is characterized clinically by inflammation and the formation of ulcerated lesions located primarily on the mucous membrane of the gums, cheeks, tongue or tonsils. When these lesions are around the teeth, there is usually considerable bleeding from the gums; when on the tonsil, the ulceration is frequently covered with a grayish exudate or membrane, and the adjacent lymph nodes are enlarged. This infection may assume serious proportions and cause much suffering. Important vessels may become eroded and hemorrhage may follow. Considerable destruction of tissue may occur. The constitutional disturbance varies with the severity of the infection. The vitality of the teeth may become subsequently impaired. There are cases on record where osteomyelitis of the alveolar processes has occurred as a complication.

Bronchial spirochetosis is a grave malady which may follow this condition, sometimes terminating fatally. It is certain that, once the disease is established, energetic treatment is demanded.

Until about three years ago, I treated Vincent's with almost every conceivable substance mentioned in text-books, with uniformly slow recovery and relief of pain. I would start by prescribing a gargle and applying silver nitrate to the lesion; then trichloracetic acid, and, finally, when the condition would not respond to this, I would refer to a G. U. man for sulpharsphenamine. In some cases the disease would clear up like magic after one or two injections, while in others there would be no appreciable improvement. I have even removed the tonsils with large crater-like ulcers in them in an effort to clear up the condition, although I felt at the time that it was not good surgery.

About three years ago I read of sodium perborate being used in the treatment of Vincent's, and began using it with splendid success, and I now firmly believe that it is an absolute specific both as a prophylatic and a curative. It is usually prescribed as a powder—two teaspoonfuls dissolved in a glass of warm water makes a saturated solution—and in the treatment should be used frequently as a mouth wash and gargle. The perborate of soda splits up in the mouth, forming nascent peroxide of hydrogen. The teeth should be brushed several times a day, using the powder as a dentifrice. It makes a good lather, cleans the teeth, and rapidly clears up the lesions in the gums. Where the tonsils are involved, the powder should be applied directly, and is best done by wrapping a piece of cotton around the end of an applicator, and dipping first in water and then in the powder, thus making a paste, which readily adheres to the tissues when applied to the neurotic areas. This treatment is remarkable in cases suffering with severe pain, for, after its application, the pain is relieved almost immediately, and in a short time the patient is well. I believe that if one would keep on hand a little sodium perborate, and use it occasionally in cleaning the teeth, they would never be bothered with trench mouth.

In the diagnosis of Vincent's, the lesions about the alveolar processes and the frequent bleeding from the gums is strongly suggestive, while it is made certain by taking smears from the exudate, which will be seen to contain innumerable organisms of two types, the spirilla and long fusiform bacilli.

Vincent's of the throat clinically may readily be confused with syphilis. According to Posey, extragenital chancres constitute about 5 per cent of all primary lesions, and of these 60 per cent occur in the mouth.

The common occurrence of chancre on the lips and tongue obviously depends on the great frequency of exposure of these parts, and the presence here of breaks in the epithelium which allows infection to enter. I believe that kissing is the most common source of extragenital chancre. Schamberg reports the case of a man with chancre of the tongue who attended a dance and kissed and infected eight girls in one evening (a pretty good average).

The chancre, whether it occurs on the lip, tongue or tonsil, closely resembles the genital chancre. Usually it is an eroded open lesion, with an indolent surface, covered with a thin grayish-yellow exudate, which, when wiped off, leaves a red, ecchymotic, weeping surface, does not bleed easily—but has a serous discharge loaded with spirochaetes. The lesion is practically painless—a most important point in diagnosis. In cases of chancre of the tongue and throat—where the diagnosis is suspected, and is made certain by referring the case to some one who does dark field illumination tests—with energetic, specific treatment, the condition can be cleared up before the Wassermann becomes positive.

Chancre of the tongue usually occurs on the dorsum, and is not painful. It must be differentiated from simple ulcers, which are more painful; from tubercular ulcer, which is extremely painful, more rare, and occurs usually along the edges or ventral surface of the tongue; and from carcinoma, which develops more slowly, bleeds freely, and is painful. Chancre of the tonsil is rather common, and at first resembles an ordinary angina, though it is usually unilateral, and after a few days may appear to be punched out and ulcerated. It may be covered with a thick grayish exudate and there is often extensive surrounding edema. The lymphatic glands below the angle of the jaw are usually markedly enlarged and painless, and there is more swelling in the adjacent lymph glands than would occur from non-syphilitic lesions of similar size. When a patient walks in your office complaining of difficult swallowing and a feeling of fullness in the throat, and on examination the throat is seen to be markedly inflamed and the contiguous lymph glands are enlarged but accompanied by very little pain, you can put it down as syphilis, for there is no other condition that will show so much inflammation and swelling in the throat without excruciating pain.

Sometime in the past year in our office, in a single week we saw three cases of spyhilis of the mouth, one chancre of the tongue, one chancre of the tonsils, and one of mucous patches on the tonsils. The mucous patch is the most frequent form of secondary syphilis seen in the throat. It is the prototype of the secondary skin eruption, the papule, and occurs with them.

Mucous patches are superficial erosions or shallow ulcers, seldom attaining any depth except on the tonsil. They are found in any part of the mouth, pharynx or fauces. They may be covered with a thin exudate which is full of spirochaetes. Mucous patches usually cause the patient little discomfort and may even escape his notice, and this makes them all the more dangerous as they are highly infectious.

Mucous patches respond promptly to general specific medication, or disappear spontaneously during the progress of the general disease, and as a rule leave no tell-tale scar.

Both Vincent's and syphilis of the throat, when observed clinically, may be confused with diphtheria, as all three conditions may show a very similar exudate closely resembling a membrane. The temperature and prostration in diphtheria are usually suggestive, while a smear from the exudate in 90 to 95 per cent of cases will show the characteristic Klebs-Loeffler bacillus.

In any severe acute inflammatory condition of the throat we should always make a smear for microscopical study, and if you are practicing in the country and are too busy or have not the laboratory equipment for staining and examining smears, make your smear anyhow, fix it, put it in an envelope, give it to some one passing in an automobile, and tell them to leave it at the nearest hospital. In an hour or two at the most, the technician can phone you with what organism you are dealing. If diphtheria is suspected, make a culture at the same time. At least 90 per cent of cases of diphtheria can be diagnosed from the smear with the microscope. This gives us a twenty-four hour start over the culture in the administration of antitoxin, and in many cases will mean the saving of life.

The importance of this procedure was impressed on me when a medical student by the sad experience of one of my instructors, who was undoubtedly one of the best pathologists in Baltimore city, and a splendid internist. One morning just before leaving the city for a vacation he was called to see the daughter of one of his dearest friends, an only child, who was complaining of sore throat. He made a hasty examination, saw the throat was inflamed, pronounced it tonsillitis, prescribed a gargle, and left town. A week or ten days later, when he returned, he found to his great surprise that this girl of about sixteen years of age had died of diphtheria during his absence. He expressed it as being one of the greatest tragedies of his life. Had he only stopped a few minutes to have made a smear or culture, no doubt he would have made the correct diagnosis.

Diphtheria in the adult is comparatively rare, while Vincent's and syphilis of the throat are seldom seen in children.

From 80 to 85 per cent of all cases of diphtheria, as well as deaths from the disease, occur in children under six years of age. One reason so many deaths occur is because we are waiting to hear from the culture when we should be administering antitoxin.

Until the past three or four years there have been annually from 150,000 to 200,000 cases of

diphtheria in the United States, with a mortality of twenty to twenty-five thousand. Since the discovery of antitoxin the mortality has dropped from 45 to about 10 per cent.

Since the discovery by Park of toxin-antitoxin, the incidence of diphtheria has been wonderfully reduced. In my opinion it is one of the greatest medical contributions of the past decade. For some reason its administration has not been accepted or advocated by the profession as a whole, although in many of our largest cities, by active campaigns on the part of the health departments, toxin-antitoxin inoculation has reduced the number of cases of diphtheria 70 to 75 per cent in a single year. I sincerely hope that the time is not far distant when all physicians will recommend the administration of toxin-antitoxin, as they now do vaccination against smallpox,—and when that time comes, I believe that this treacherous disease, which stifles the life out of so many little ones, will be as readily controlled.

Shenandoah Life Building.

SYMPATHETIC IRIDOCYCLITIS NOT A MYTH.

Report of Two Cases of Non-Foreign Body Origin.

By V. K. HART, M. D., Statesville, N. C.

Sympathetic iridocyclitis must be sharply differentiated from sympathetic irritation. In this latter condition there may be photophobia, some impairment of accommodation or vision; even some contraction of the fields. However, there is never any evidence of involvement of the internal structures of the good eye as indicated by pericorneal injection, punctate deposits on the posterior cornea, hazy media, retinal changes, etc.

Moreover, clinically sympathetic iridocyclitis may be divided into two classes.[1] 1. Serous. 2. Plastic or malignant. This latter type usually leads to destruction of vision.

The first case presented below was of the serous type. It is of interest because of the long period of time elapsing between the injury to the exciting eye and the appearance of symptoms in the sympathizing eye (twenty years).

Case No. 1. The patient, a male age thirty-two years, first came under observation February 6, 1927. Chief complaint, inflamed left eye. Stated he was struck in this eye with a stick when twelve years of age. Since then has had two previous attacks of same type of trouble in the affected eye, but both disappeared without treatment. Has been a sufferer from asthma for ten years. Malaria four years ago. Rest of history entirely negative.

Examination showed vision of left eye reduced to light perception and gross objects. There was evidence of adhesions between iris and lens though pupil was not occluded. Marked circumcorneal injection, a posterior polar opacity, vitreous opacities and several retinal scars above and to nasal side of the nerve completed the objective findings. Examination of the right eye was negative. X-ray for foreign body negative. Kahn and Wassermann negative.

Course: He was put under the usual therapeutic measures and during the following week the eye improved. Shortly thereafter he disappeared from observation.

On April 14, 1927, the writer was called in consultation at the home by the family doctor. There was some swelling of the lids and edema of the ocular conjunctiva of *both* eyes. Questioning brought out the fact that the family doctor had prescribed atropin for both eyes several times daily. Consequently the conjunctival and lid manifestations were interpreted as an atropin conjunctivitis. Moreover, vision was good in the right eye and there were no intra-ocular findings. The drug was discontinued at once and the eyes improved very much. A sympathetic involvement was not at this time suspicioned.

On April 18, 1927, the patient was again seen at the home. There was still a great deal of edema of the ocular conjunctiva of the right eye, which made the determination of true ciliary injection very difficult. A sympathetic involvement was now suspected and removal to the hospital urged at once for study.

The fields for the right eye were found definitely contracted for motion and colors although no scotomata were demonstrated. A retinoscopy showed only a diopter of hyperopia with a one-fourth diopter of astigmatism @ 90. Nevertheless at the trial case his vision was: S plus 1.00 cyl. plus .25 @ 90 equals 20/80. Such a marked diminution of vision could hardly be due merely to "irritation". There were no intra-ocular findings except a hyperemic nerve head. *Tension:* O. D. 14; O. S. 12 (Schiotz tonometer). There were never punctate deposits on the cornea of either

eye (descemetitis). *Diagnosis:* Sympathetic, serous iridocyclitis, right.

The left eye was, therefore, at once removed under general anesthesia. Recovery from operation was uneventful.

Energetic therapy was instituted to save the right eye. Such consisted of daily mercurial inunctions and pilocarpine sweats, saline laxatives, salicylates and foreign protein in ascending doses intramuscularly (whole milk). With respect to the latter it was noted by taking a blood count before and after an inoculation that the W. B. C. was only increased about 1,500 by the same. Locally the pupil was kept will dilated, the tension being carefully watched. Highest tension recorded was 22 (Schiotz tonometer). The eye was kept covered and hot compresses used fourth hour.

With such therapy the edema promptly subsided. Then, and only then, was a well defined ciliary injection demonstrable. It is interesting to note that a culture of the right conjunctival sac during the edema showed only staphylococcus aureus.

The patient was discharged as well April 30, 1927. The fields and vision were normal.

Case No. 2. A boy, age 12 years, was struck in left eye with piece of flying nail nearly four months ago. Mother did not think it necessary to take him to a doctor until three months later and only then because the good eye had become involved. Insists both eyes good before accident and denies any previous trouble. Rest of history of no importance.

Examination: Near inner cornea, left, is old scar with adherent iris. Deep circumcorneal injection. Pupil completely occluded with inflammatory exudate. Iris discolored with areas of degeneration and marked atrophy. The right eye (sympathizing) presented exactly the same picture with the exception of the scar on the cornea. In other words there was a plastic iridocyclitis of both eyes. The rest of the physical examination was negative. Kahn and Wassermann negative. X-ray for foreign body negative.

Course: Left eye was enucleated. Iridectomy done, right. Same general measures instituted as on Case 1. Response very discouraging. Two weeks later the iridectomy opening was completely closed by inflammatory exudate and it was necessary to do a second iridectomy because of a complicating glaucoma. Despite the same the tension remained moderately elevated (32-43 Schiotz tonometer).

It is interesting to note that a culture of the vitreous of the enucleated eye immediately after removal was sterile.

Sections of the same eye showed the usual inflammatory reactions of the internal structures *but no organisms.*

After several months of treatment the end result was very poor. There was slight elevation of tension with no subjective symptoms. The previous iridectomies left a small opening, partially filled with inflammatory exudate and through which there was only light perception. A mild, chronic iridocyclitis persists which will probably eventually necessitate enucleation.

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Miscellaneous

Clinical Laboratory Service in the United States.

For the information of our readers, we publish the following statement by the Council on Medical Education and Hospitals, of the American Medical Association, received from the secretary of that council, Dr. N. P. Colwell:

During the last decade there has been much discussion in medical and laboratory journals and particularly on the platform of medical and laboratory conventions, regarding the status of the clinical laboratories of the country. Especially it was regretted that the practice of clinical pathology, regarded as one of the medical specialties, had fallen into disrepute. The fact was lamented that the laboratory work had fallen into the hands of lay technicians and become the toy of persons who had a purely commercial point of view and very little training for the work. Much disgust and quite a strong note of despair was sounded by those few members of the medical profession who had championed the cause of clinical pathology and had adopted that specialty as a life work.

Many letters were received at the office of the American Medical Association from practitioners of pathology and leaders in medicine, regretting the drift toward lay commer-

cialism, and urging that something be done to counteract it. What to do about it was a question. Organizations of chemists were interested because some of their members ran laboratories. Likewise organizations of clinical pathologists, bacteriologists, and of the medical profession were equally interested. Some of these organizations working alone undertook to investigate and to standardize the practice of clinical pathology, hoping to check the drift of that practice into the hands of technicians and restore it to its rightful place as a medical specialty.

The efforts of those organizations working single handed were of little or no avail except to emphasize the enormity of the task and the necessity for cooperation.

Cooperation Effected in 1923.

The necessary cooperation of the laboratory and medical organizations was brought about in 1923 at the annual meeting of the American Medical Association in San Francisco. At that time, delegates sent by the American Chemical Society and the American Association of Pathologists and Bacteriologists separately petitioned the American Medical Association to establish some supervision over clinical laboratories. This led to the appointment of three committees representing the American Chemical Society, the American Association of Pathologists and Bacteriologists, and the council on Medical Education and Hospitals. At a joint meeting of these committees in Chicago early in 1924, after much deliberation; certain basic principles underlying sound laboratory service were agreed upon which stressed especially a qualified bona fide director as the prime essential. The joint committee agreed that the work could best be conducted by the Council on Medical Education and Hospitals.

The first steps were: (a) to secure a complete list of laboratories in the country; (b) the preparation of a schedule of essentials in an approved clinical laboratory, and (c) the preparation of a questionnaire by which the essential facts regarding each laboratory could be obtained. Each of these measures was carried out with the advice and cooperation of fifty or more clinicians and others expert in laboratory work, including the committeemen of the above-named organizations, and by the officers of the American Society of Clinical Pathologists which very early showed an interest and from which the Council has received a hearty cooperation.

After being revised and adopted by all parties interested, the questionnaire was mailed to all the laboratories of the country and a most hearty response was received. A complete report of the survey, "Essentials of an approved Clinical Laboratory," and a preliminary list of laboratories which appeared to be fully complying with those "Essentials," were published in the Hospital Number of the Journal for April 3, 1926. The facts as published were submitted to the House of Delegates of the American Medical Association at the Dallas session in 1926 and approved by that body.

To assist in giving as fair consideration as possible to each application for approval, a strong committee of laboratory experts was formed in every state or section of the country. Those committees aggregate one hundred and twenty individuals representing, as equally as possible, the co-operating organizations and hence the interests of the laboratory profession. Under the direction of the Council, each committeeman makes his investigation and renders his report or advice independently of other committeemen in the same district.

At the present time, of the three hundred and fourteen laboratories that have reported, one hundred and fifty-one, after careful investigation, have been placed on the approved list and other applications for approval are constantly being received.

The Council lends all possible assistance to laboratories whereby they may become eligible for admission to the accepted list. Every laboratory that makes a report and signifies a desire to conform to the requirements, is informed in regard to any deficiencies. The spirit of this movement all the way through is constructive. Anyone who knows the condition of the laboratory field at the time this survey was begun, would not expect very telling or spectacular results to be shown by this time; nevertheless, there are ample reasons for believing that actual improvements are being made: (1) A number of laboratories formerly run by technicians and only nominally under "medical" directors, have come under the ownership and actual control of clinical pathologists of high professional standing

and ripe experience; (2) a number of laboratories under the control of technicians have gone out of business; (3) the "Essentials" have been published repeatedly and thus brought to the attention of all persons working in the field of clinical pathology; (4) there is an increased demand for pathologists to man the clinical laboratories of the country; (5) the director of the Mayo Foundation says that the salaries offered the pathological graduates of the Foundation are double those offered to other graduates of the Foundation; (6) the feeling of unsteadiness indicated in the discussion of a few years ago has subsided to a considerable degree, and there is a more hopeful attitude on the part of the clinical pathologists themselves.

FUTURE OUTLOOK.

The movement is still in its beginning, but a good start has been made. To what extent doctors have actually discontinued sending specimens to unapproved laboratories and are sending them to approved laboratories is not known. The educational results, however, are becoming increasingly evident. In order to secure the best analyses for the benefit of their patients as well as to best conserve the interests of the medical profession, physicians should refuse to have their work done at laboratories conducted under the direction of non-medical individuals. Much depends, also, on the continued hearty support of the various organizations and individuals who operate in the laboratory field. That this is already assured is indicated by the promptness with which laboratories are filling out and returning the form that has recently been mailed out by the Council on Medical Education and Hospitals for a complete and needed resurvey of laboratory service. The resulting data from this survey, will be published for the benefit of all. Of course, any laboratories that are not yet on the list, will be promptly considered for approval, if they express such a desire.

Sketch of Sadie Heath Cabaniss—A Pioneer Nurse in Virginia.*

Miss Sadie Heath Cabaniss was veritably the "lady with the lamp," the Florence Nightingale of her native state, the pioneer in the field of nursing, who held high the torch of professional standards and ideals, and with a vision like to that of her famous predecessor, recognized the needs of the people, and met them as far as skill, tact, and executive ability could make it possible.

She was born in Petersburg, Virginia, daughter of Charles J. Cabaniss and Virginia E. Heath, into a heritage of the culture and refinement with which she was so richly imbued. Her early childhood was spent at the ancestral home "Bothwell," in Dinwiddie County. Her father was a lawyer by profession, but retired from active practice before middle life on account of frail health. He was an indefatigable student, a finished classical scholar; in writing of him she says, "He had old-fashioned ideas of cultivating literary taste and mental development, hence very little fiction and other light literature were allowed me, until as a nurse, I read them as a diversion when the responsibility for the lives, as well as the mental and physical sufferings of my patients, weighed on my mind to a most trying and discouraging degree."

Miss Cabaniss was a good Latin scholar, read French and German easily, and spoke German fluently. She graduated from Mt. Pisgah Academy, in King William County, at the age of sixteen, and later attended St. Timothy's School, in Catonsville, Maryland, under the Misses Carter. She taught for awhile, but as she expressed it, "a life-long determination to study nursing" decided her to enter training. Johns Hopkins Hospital was her choice, with Isabel Hampton as superintendent. Under such guidance, associated with such men as Dr. Osler, Dr. Thayer, Dr. Halsted, and others, and with such co-workers as Miss Nutting and Miss Nevins, she absorbed the best that was to be had.

After graduation, she held the position of night superintendent there until 1894, when a call came from the Medical College of Virginia to the Johns Hopkins Hospital to send them a nurse to take charge of the operating room of the Old Dominion Hospital, in Richmond, which stood where St. Philip Hospital now stands. They sent Miss Cabaniss and, determined to give the best she had to her own state, she brought to her task all the ardent enthusiasm and patriotism of her nature. The Old Dominion Hospital was un-

*Prepared by Miss Nannie J. Minor, R. N., but read by Miss Elizabeth Webb, R. N., at the exercises incident to the laying of the corner-stone of Cabaniss Hall of the Medical College of Virginia, Richmond, on January 20, 1928.

der the care of the Catholic Sisters, but her duties as clinic Nurse often brought her from the operating room into the wards. So much impressed were the doctors with her organizing ability, that they decided at the end of six months to reorganize the hospital and put her in charge of developing a training school according to the Nightingale method of nursing education. A few pupils were already in the hospital, and with these as a nucleus, she organized her training school; the first graduating class, in 1897, had nine nurses.

She was a rigid disciplinarian, as all the early leaders were. She was courageous and determined where she thought her duty lay, but shy and retiring as an individual. Lovely and refined in appearance, and possessed with an unusually magnetic personality, she also showed a strength of character that impressed itself upon all with whom she came in close contact; and there are still many who "rise up and call her blessed."

The hospital building was old and inconvenient, but the superintendent's spirit was so indomitable in its determination to overcome difficulties, that her pupils could not fail to catch some of it. Patients and duty came first always, self was put far in the background. As hospital accommodations were very limited, and for some time the demands for beds so far exceeded the supply, it was often necessary to return patients to their homes as soon as they could be moved, and send the pupil nurses there to continue the treatments or dressings as long as the doctor thought necessary. This was especially the case with the ward patients, and the student nurses were given many opportunities of seeing "how the other half lives."

Always on the alert to relieve suffering, it was brought to the attention of Miss Cabaniss that at the Soldiers' Home there was no way to give skilled nursing care to the "Old Vets" when they became ill, so an arrangement was made to supply a nurse from the hospital when need arose. The Sheltering Arms Free Hospital nearby was having a struggling time; Miss Cabaniss offered her services to the board of that hospital, and arranged to have one or more of the pupil nurses always on duty there. The president of that board, in writing of that arrangement, says: "Miss Cabaniss was so kind and tactful as to say that she not only desired to help, but that the experience her nurses would get at the Sheltering Arms would be helpful to them, because there was a greater variety of patients. She supervised this hospital for several years, and the relations were severed only when her Hospital and Training School grew so large that she deemed it unwise to continue to supervise both hospitals."

Another outstanding experience was in 1898, the year of the Spanish-American war, when an epidemic of measles broke out among the soldiers in camp near Richmond. The Medical College threw open the college building for the sick, and the organizing powers of Miss Cabaniss were taxed to the utmost in arranging for the necessary nursing care. Again, on their return from the war, when an epidemic of typhoid made assistance necessary, the house standing on this spot was used to house the typhoid patients who were cared for under her supervision. It was a very interesting, but many times a very tragic experience.

Five classes of nurses were graduated under her from the Old Dominion Hospital. The fourth class (1900), consisting of seven nurses, became so deeply interested in the follow-up work in the homes of the poor, that the whole group determined to devote themselves to this work on graduation. This met with Miss Cabaniss' approval and sympathy, as she too had determined ultimately to devote her life among the poor. With the work of the Nurses' Settlement, in New York, under Miss Lillian Wald as the inspiration, she and this group of nurses and a few outside friends, organized in 1900 and secured a charter for the Nurses' Settlement of Richmond. Many phases of work for civic betterment have developed from her work in this settlement: the Instructive Visiting Nurses Association, School Nursing, Tuberculosis Nursing, the Crippled Children's Clinic, the Probation Officer for Juvenile Court, also similar organizations in other places, and finally rural public health nursing in Virginia.

Miss Cabaniss resigned from the Old Dominion Hospital in the spring of 1901, came into residence at the Nurses' Settlement in the fall of that same year, and was the director for nine years.

With the welfare of her profession always at heart, Miss Cabaniss interested herself early in inducing the various training schools for

nurses to organize their graduates into local Alumnae Association, which later came together to form the Graduate Nurses Association of Virginia; Miss Cabaniss was elected first president, held the position for five years, and later was elected honorary president. The first work of the Graduate Nurses Association was to frame a law to regulate the practice of nursing in the state, and in 1903 the law was passed, thus enabling Virginia to share with North Carolina and New Jersey the honor of being one of the first three states to require the registration of nurses. A board of Nurse Examiners was named by the Governor; Miss Cabaniss was one of these examiners and was chairman of the board for nine years.

In 1909 Miss Cabaniss resigned from the directorship of the Instructive Visiting Nurses Association, in Richmond, and became the first rural nurse in the state. Her field was in Hanover County, in the neighborhood of Oakland, the Page home. She lived in the home endowed for a district nurse by Thomas Nelson Page and his wife, as a memorial to his mother.

In her second year of service there Miss Cabaniss sustained a severe illness, which necessitated her abandoning all work for a period of three years. Upon her recovery she served for about six months with the North Carolina State Department of Health. Later, in 1915, she went to Florida to establish public health nursing in St. Augustine, and while there developed a settlement somewhat on the plan of the Nurses Settlement in Richmond. In 1918, being anxious to do what she could to help in those days of stress, she resigned her duties in Florida and went as public health nurse to Port Wentworth, near Savannah, and served in the shipyards there for several months. She then returned to Virginia, and because of her keen interest in the rural sections, took the position of public health nurse in a restricted section of Westmoreland County, selecting this particular section because of the proximity of a friend to whom she was very devoted. Always she worked beyond her strength, her indomitable will keeping her going, but this last task proved too much for her frail body, and a breakdown came, which resulted in her death in July, 1921.

In no better way can the achievements of this great woman be summed up than in the beautiful notice of her which appeared in the *News Leader* at the time of her death, an extract from which is copied:

"First superintendent in the present sense of the word in a Richmond hospital, prime mover in the establishment of the Nurses' Settlement, and thereby of the I. V. N. A.; in the fore of those who procured professional recognition for the trained nurses of Virginia; leader in the organization of the State Association of Graduate Nurses; early in the field as a rural public health nurse, indomitable idealist, social prophet—who can fail to place this wonderful woman among the great pioneers of the commonwealth?"

Public Warned to Guard Against Tularemia.

Tularemia, a serious and often fatal disease known also as "rabbit fever" or "deer-fly fever," has spread so widely that Paul G. Redington, chief of the Biological Survey of the United States Department of Agriculture, has issued a warning to all field men of the department to be on guard against it. The department is making public this warning for the benefit of sportsmen, lumbermen, cattle and sheep tenders, farmers, and others of the general public who may come in contact with the disease. Mr. Redington's warning has been endorsed by the United States Public Health Service.

"Tularemia," Mr. Redington explains, "is a plague-like disease of rodents transmissible to man. Of 500 human cases reported in the United States, twenty have terminated in death."

Cases of tularemia have been discovered in all states except Washington, Wisconsin, New York, Delaware, and the New England States. It has been established definitely that the disease is caused by an organism, Bacterium tularense. In nature the disease affects jack rabbits, snowshoe rabbits, and cottontail rabbits. This provides a reservoir for infection of both wild animals and human beings. No cases have yet been recognized in commercial rabbitries, and care should be exercised to avoid the introduction of tularemia into such places. There is no danger of contracting the disease from eating rabbit meat if it is thoroughly cooked, even though the animal may have been infected.

In the Western States the disease is car-

ried from animal to animal and from animal to man by the bites of infected deer flies and ticks. Ticks also act as carriers in the Southern States. Men also become infected by handling rabbit carcasses, as in dressing them for the table or cutting them up to use as food for animals or bait in fishing or trapping. In the East, such direct contact is the common means of infection.

For protection against tularemia, the best known precaution is the use of rubber gloves when handling or dressing rabbits, or when skinning other animals that may be infected with the disease. In the open it is wise to exercise care in avoiding the bites of deer flies, ticks, or other possible carriers. Wearing rubber gloves is not an absolute protection, for skilled laboratory workers who are scrupulously careful because they are aware of the dangers, often contract infection. Rubber gloves should be worn in handling fresh skins. Dried skins are not likely to carry infection. One attack of tularemia confers immunity to man, hence those who have recovered from the disease should be employed wherever possible in occupations where there is risk of infection. No protective vaccine has been developed as yet.

In addition to the wild rabbits most affected by tularemia, and man who may contract the disease, scientists have discovered cases of tularemia in California ground squirrels, Columbia ground squirrels, Utah ground squirrels, desert ground squirrels, pine squirrels, yellow-bellied chipmunks, pocket gophers, woodchucks, opossums, cats, porcupines, house mice, deer mice, meadow mice, wood rats, and coyotes, and susceptibility is being investigated in other animals. All possible carriers of the disease should be handled with care.

Mr. Redington also warns of the danger of liberating wild rabbits trapped in one locality for the restocking of hunting areas. When restocking seems desirable, a quarantine should be maintained and no rabbits should be liberated for about ten days, to give the disease time to develop in the imported rabbits, which it will do usually in five or six days if they are infected. Otherwise the diseased rabbits are likely to cause a rabbit epizootic, reduce the game available for hunting, and create a center of infection from which human beings may contract the disease.

In man tularemia is likely to manifest itself first by pain, tenderness, and a swelling of the lymph glands draining the region where the infection occurs, as those of the elbow or armpit when infection has occurred on the finger. These symptoms are likely to develop within two to five days after infection. An inflamed and painful ulcer may soon appear where the insect bite occurred, although in some cases this does not happen. The development of the disease is likely to be accompanied by sudden onsets of headache, aching pains, chills, prostration, general weakness, and fever.

Manufacturers advise Government on the Degree of Accuracy Commercially Attainable in Medicinal Tablets.

The contact committees of the American Drug Manufacturers' Association and the American Pharmaceutical Manufacturers' Association have submitted to the Food, Drug and Insecticide Administration, United States Department of Agriculture, an extensive report in which they have indicated the degree of accuracy within which properly manufactured medicinal tablets can be made under present-day manufacturing methods. The report includes also methods of analysis for the tablets.

This is the third report submitted by the committees to the department. The previous reports related to hypodermic tablets. The present one, in addition to amendments to the previous reports, includes suggested tolerances for ten of the more common compressed tablets.

The Food, Drug and Insecticide Administration, which is charged with the administration of the Federal food and drugs act, has stated that in its activities in connection with the enforcement of the law, it will give careful consideration to the recommendations of associations of manufacturers of products subject to the act. In promulgating the report of the contact committee, the department invites comment from manufacturers, distributors, prescribers, and any others interested in the preparations involved.

The tolerances recommended by the contact committees are as follows:

HYPODERMIC TABLETS.

Atropine sulphate, 7½% to 12%, depending upon the grainage.

Cocaine hydrochloride, 9%.

Hyoscine hydrobromide, 7½% to 12%, depending upon the grainage.
Morphine sulphate, 7½%.
Nitroglycerin, 15%.

COMPRESSED TABLETS.

Acetanilid, 7½%.
Acetphenetidin and salol, 10%.
Calomel, 7½%.
Calomel and soda, 7½% to 10%, depending upon the grainage.
Cinchophen, 7½%.
Codeine sulphate, 9%.
Phenolphthalein, 7½%.
Salol, 9%.
Sodium bromide, 7½%.
Strychnine sulphate, 7½% to 12%, depending upon the grainage.

Complete copies of the report, including recommended assay processes for the various tablets, may be obtained from the Food, Drug and Insecticide Administration, United States Department of Agriculture, Washington, D. C.

Bibliotheca Obstetrica

Lawrence Sterne.

Sterne (Lawrence) [1713-1768]. The life and opinions of Tristram Shandy, gentleman. *New York. The Jenson Society*, 1906. *For Biography, see* Thackeray (W. M.) Humourists; *also* Cross (Wilbur L). The life and times of Lawrence Sterne. *New York*, 1909; *also* Fitzgerald (Percy) Life of Sterne, 1896.

One of the by-products of the acrimonious discussions engendered by the introduction of the obstetrical forceps into general use is the delightful satire of Sterne. The Life and Opinions of Tristram Shandy are told *ab Ovo*. In fact the story antedates his conception. An explanation is given of how Tristram's mother cheats herself out of the advantages of being confined in London by taking her husband up to the metropolis on a wild goose chase the previous year on account of a pseudocyesis. Disappointed in not being able to have the best care in London, Mrs. Shandy is determined to go to the other extreme and have a local midwife. Her husband, being of scientific bent, is just as determined that his offspring shall not run the risk of cerebral trauma incident to a natural delivery. Cesarean section is largely responsible for Caesar's greatness as well as a number of other celebrities that he mentions. He quotes at length various authorities such as *Lithopaedus Senonesis de Partu difficili* by Adrianus Smelvgot (Smellie).[1] His figures as to the amount of pressure exerted upon the child's head at delivery, i. e., 470 pounds, are still quoted in text books on obstetrics. A compromise is reached by which his wife is to have a midwife and he is to have a man-midwife in the house in case there is any difficulty. He calls Dr. Slop (Dr. John Burton) who has devised an instrument to expedite delivery. Dr. Slop arrives after a number of misfortunes. He tries his instrument and crushes Tristram's nose. This happens in Book III.

The satire came out serially. It met with instant success in London and Sterne promised himself to produce two books a year concerning the Shandy fortunes. Poor health, however, soon interfered with the program. The humor of the book is delightful and the characters of Tristram's father, a well-to-do English squire, with universal knowledge, the sexually frigid Mrs. Shandy, Tristram's Uncle Toby, whose only interest is the military campaigns in Flanders, and Corporal Trim are drawn with such skill that they are immortal.

Sterne came of an ecclesiastical family although his father was a soldier. His great-grandfather was the Archbishop of York. His uncle, Dr. Jaques Sterne, was precentor and canon of York, besides being the main stay to Whig principles in the North of England. It was he who persuaded our author to take orders as the easiest way to a competency. Wilbur L. Cross pictures him as an emotional, impulsive nature with no force of character. Thackeray describes him as "foul Satyr". Cross' characterization of him as being "a humorist pure and simple and nothing else" fits best with the description he gives us of himself in the character of poor Yorick. "Sterne rarely, perhaps nowhere except in the sketch of Dr. Slop, reached the border where humor passes into satire, for satire means a degree of seriousness unknown to him." His attack upon the worthy Dr. Burton is ex-

1. This little jest of Sterne's seems to have escaped most of his Editors who gravely state that not only did Sterne make a mistake in spelling, but that the Lithopaedus is not a book but a calcified fetus. William Smellie makes the same mistake and is ridiculed for it by John Burton in his "five shillings' book upon the subject of midwifery."

plained by the late Dr. Alban Doran. Burton was the hated political opponent of Dr. Jaques Sterne. This hatred was shown in a number of ways and culminated in the imprisonment of Burton on the charge of being in communication with the forces of the "Young Pretender" at the time of their invasion of the North.

M. P. R.

Proceedings of Societies

The Virginia State Board of Medical Examiners

At its session held in Richmond, December 6-9, 1927, granted certificates to practice medicine in Virginia, to the following:

Dr. John Quincy Adams, Hampton, Roads, Va.
Dr. Staige Davis Blackford, University, Va.
Dr. Carl A. Broaddus, Dahlgren, Va.
Dr. John I. Chorlog, Clifton Forge, Va.
Dr. Thomas Hal. Clark, Jr., Christiansburg, Va.
Dr. Francis R. Crabill, Burkeville, Va.
Dr. Elizabeth Holt Edmunds, Richmond, Va.
Dr. William Engler, Brooklyn, N. Y.
Dr. David Phillip Evans, Jersey City, N. J.
Dr. Howard N. Freeman, New Market, Va.
Dr. Norman Howard Goose, Jersey City, N. J.
Dr. James Linwood Harris, Danville, Va.
Dr. Thomas B. House, Murray, Ky.
Dr. Clarence Robert Jones, Norton, Va.
Dr. William L. Miller, Raywood, W. Va.
Dr. William G. Mitchell, Philadelphia, Pa.
Dr. Ellis Columbus Moore, University, Va.
Dr. Clarence Eugene Sumner, Newport News, Va.
Dr. Felix D. Swope, Washington, D. C.
Dr. Wade Hampton Venable, Catawba, Va.

The Post-Graduate Medical Society of Southern Virginia

Met at Stony Creek, Va., January the 10th, under the presidency of Dr. E. W. Young, of Petersburg. The attendance was good, several interesting papers were read, and the members were entertained at dinner by Dr. Joel Crawford, of Yale, Va. The election of officers for 1928 was held and resulted as follows: President, Dr. S. E. Gunn, Hopewell; vice-presidents, Drs. C. E. Martin, Emporia, and F. N. Mallory, Lawrenceville; secretary-treasurer, Dr. W. C. Powell (re-elected), Petersburg. The membership of the two following committees remained the same: Board of Censors, Drs. W. D. Prince, Stony Creek; W. W. Bennett, Blackstone, and D. C. Mayes, Church Road; Public Health and Legislation, Drs. F. N. Mallory, Lawrenceville; W. W. Seward, Surry, and M. H. Tredway, Emporia. This Society is composed of the seven counties of Nottoway, Dinwiddie, Prince George, Greenesville, Brunswick, Surry and Sussex.

The Mid-Tidewater Medical Society

Held its regular quarterly meeting at Tappahannock, January the 25th, the president, Dr. James W. Smith, of Hayes Store, presiding. Dr. Malcohm H. Harris, of West Point, secretary, was at his desk. The attendance was good, considering the season, and four new members were elected to membership. It was decided to have the election of officers in October, the present officers holding over for the year 1928. There was a general discussion of upper respiratory infections, and Dr. J. D. Clements, of Ordinary, read Dr. J. H. Hiden's prize paper in the recent contest for essays, on "How the Family Doctor Can Best Increase His Usefulness and His Income," which was published in *Southern Medicine and Surgery*.

The next meeting of this Society will be held in Urbanna, Va., at Urbanna Beach Hotel, on the fourth Wednesday in April.

Roanoke Academy of Medicine.

Invitations were extended to the various civic organizations, the city council and the school board to attend the regular night meeting of the Academy, on January the 23rd, to stimulate interest in the matter of playgrounds for children in Roanoke. The speakers of the evening were Dr. W. A. Parker, representative of the National Playground Association, and Mrs. Mundy, of Lynchburg, Va.

Dr. J. T. McKinney is president and Dr. H. Heyward Wescott, secretary-treasurer of the Academy.

The Albemarle County Medical Society,

At its annual meeting, elected Dr. Frank B. Stafford, of Blue Ridge Sanatorium, president for the ensuing year; Dr. V. W. Archer, University, vice-president, and Dr. F. C. McCue, Charlottesville, was re-elected secretary-treasurer. Several new members were received at this meeting.

Danville Academy of Medicine.

In spite of the fact that the Pittsylvania County and Danville Medical Society is an exceedingly active organization, the Danville Academy of Medicine continues to meet and has arranged an interesting program for February the 14th, at which time papers will be read by Drs. C. L. Bailey and C. T. Carter of that city. Dr. I. C. Harrison is president and Dr. J. A. Hawkins secretary.

The University of Virginia Medical Society

Held its first meeting at the University of Virginia Hospital Monday, January 9, 1928, at 7:30 P. M., Dr. Bray presiding, with a large audience, including faculty, medical students and visiting physicians.

Dr. W. W. Waddell reported the case of a child with pneumonia who developed an area of hyper-resonance, which was shown by X-ray and operation to be empyema. Discussion by Dr. Lawrence T. Royster. Exhibit of X-ray by Dr. Vincent Archer.

Dr. Flippin reported a case of tularemia, one of several in a family. The literature was reviewed by Dr. J. Staige Blackford.

Dr. W. J. Rollins, Jr., described a case of amebic abscess of the liver, presenting difficulties in differentiation from a cyst or false cyst of the pancreas. In the absence of history of dysentery, diagnosis was not made until operation. Ameba histolytica was recovered from the abscess cavity. Discussion by Dr. S. H. Watts, with demonstration of X-ray films.

Dr. Harry T. Marshall presented organs and microphotograph projections from two autopsies on rheumatic fever, in one of which there was congenital absence of septum between the right and left atria. Discussion by Dr. J. Edwin Wood.

Dr. Vincent Archer showed X-ray films of a patient, clinically indefinite and neurotic. The film showed both a gastric and duodenal ulcer.

Following the presentation of cases and laboratory material, Dr. Bruce Morton read a paper, illustrated with lantern slides, of a detailed experimental research upon gastric ulcer. Paper to be published elsewhere. Discussion by Dr. S. H. Watts, and Dr. Homer Smith, who reviewed recent aspects of the physiology of the stomach.

The guest of the evening, Dr. W. B. Porter, of Richmond, read a paper on rheumatic fever, reviewing the recent contributions to the subject and advancing the view that rheumatic fever is a continuous infection with many analogies to tuberculosis, and, like tuberculosis, demands prolonged therapeutic rest, preferably in sanatoria. Discussion.

The second meeting of the Society is scheduled for January 23rd, and the third for February 6th.

Physicians, especially members of the Medical Society of Virginia, are cordially invited to attend.

HARRY T. MARSHALL, M. D.,
Reporter.

Woman's Auxiliary, Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

Greetings from General Officers of the American Medical Association.

The January issue of *The Journal of the Woman's Auxiliary to the American Medical Association* expresses so well the value placed on this excellent organization by officers of the American Medical Association, that we are taking the liberty of quoting greetings from some of the officials.

Dr. Jabez N. Jackson, President of the Association, says:

To the Members of
The Woman's Auxiliary
GREETINGS

Wishing—
Success for your husband
Joy and happiness for you
Glory and honor to our profession
Good will among all.

Dr. Wendell C. Phillips, of New York City, last year's president, sent his greetings in the following form:

It is a pleasure for me to extend greetings to the *Journal of the Woman's Auxiliary* and to endorse the efforts of the organization to further the cause of public health education. This is a phase of medical affairs which can

well be undertaken by the wives of the physicians of the United States. One department deserves special mention: I refer to the importance of periodic health examinations from infancy to old age. Primarily this effort is for the best interests of the people. Secondarily, if this movement is proprely promulgated and encouraged, it is bound to result in great improvement in the economic condition of the physician.

Drs. W. J. and C. H. Mayo, of Rochester, Minn., think that:

The home life of the physician's wife is necessarily one of sacrifice in order that the physician may answer the demands of his calling. It is a source of pride to every member of the medical profession that in the Woman's Auxiliary of the American Medical Association we have such splendid evidence of woman's loyalty to the cause of humanity.

Dr. Ray Lyman Wilbur, of Palo Alto, Calif., another ex-president of the Association, expresses his greetings in the following paragraph:

The practice of medicine calls upon the doctor's wife and family for constant service. The women who are linked up with the medical profession must inevitably play a large part in representing medicine before the public. The Woman's Auxiliary to the American Medical Association has brought together a large group of earnest and helpful women who are rendering, not only personal service to members of the profession, but public service as well. May I join with many others in sending to the members of the Woman's Auxiliary my congratulations and express to them my gratitude.

Dr. Olin West, secretary and general manager of the Association, always interested in everything for the advancement of the Association and the Auxiliary, says:

I have been greatly interested in reading plans for the Woman's Auxiliary. It seems to me that the program you have in mind is safe and designed to be extremely helpful. It is desirable . . . to promote the organization of the states as rapidly as is practicable. . . . With respect to the . . . preparation of health programs to be presented before Women's Clubs, I have been of the opinion the greatest possibilities for good are to be found in this procedure. . . . I have made special effort to ascertain just what health propaganda is being promoted in clubs. The facts as I have discovered them are astounding.

Dr. F. C. Warnshuis, of Grand Rapids, Mich., speaker of the House of Delegates of the American Medical Association, has endorsed the Auxiliary with the following statement:

I, indeed, welcome the opportunity you so cordially extend, to tender greetings to the members of the Auxiliary as well as to the host of doctors' wives who as yet remain unaffiliated.

In every field of human endeavor, that which has been attained and which typifies the ultimate of present-day civilization may be directly traced to the influences exercised through organized effort. No individual, no isolated coterie, can achieve as ably or with as far-reaching results as can a nation-wide group of organized individuals. It is for that reason that I not only commend but heartily endorse the aims, scope and activities of the Woman's Auxiliary.

The Auxiliary's object and purposes conform to the existent opportunities heretofore unsolved, neglected and awaiting the guiding direction of your organization.

The Auxiliary creates an opportunity for every doctor's wife to subscribe supporting assistance to her husband, to his medical society and to all humanity, thereby enhancing their individual and collective interests to the common good. To serve, to be of service, what other opportunity affords so great a degree of personal satisfaction? That, to me, seems to be a primal reason for every doctor's wife to become an active member of the Auxiliary.

Every honor and praise is due to the original sponsors and organizers of the Auxiliary. They perceived, they felt the urge, they demonstrated their convictions and the Woman's Auxiliary has assumed its rightful place. It is serving, and all mankind will be better by reason thereof.

I bid you good speed with a fervent wish that 1928 will be a year of exceptional advancement and achievement.

Dr. Allen H. Bunce, Atlanta, Ga., vice-speaker of the House, says:

The founding of the Woman's Auxiliary to the American Medical Association marked a new epoch in the forward progress of organ-

ized medicine in America. Its growth, under the able leadership of its officers, has been truly phenomenal and could have occurred only because of the fact that it fills a very definite and necessary place in the scheme of things medical. We are very happy to note that the last remaining remnants of doubt as to the advisability of such an organization are rapidly disappearing from the minds of even the most conservative members of the American Medical Association. This is due in no small measure to your remarkable ability to clear away and dispel doubts by the logic of service to the Local, State and National Association, and more particularly to the individual communities, by teaching and practicing the gospel of organized medicine for the good of the commonwealth. At the recent meeting of the secretaries and editors in Chicago they voted unanimously to aid you through the individual state journals by devoting a special section in each to the Auxiliary and its work. Thus it will become more and more of a potent factor for progress in all the states. Soon no state in the Union can afford not to have an Auxiliary. I congratulate you on the progress already made and predict a glorious, successful and useful future for the Auxiliary.

Last, but not least, we have the endorsement of the president of our own State Medical Society, Dr. J. W. Preston, of Roanoke, Va., as follows:

I am wondering if our societies fully realize and appreciate the field of usefulness and the accomplishments of the Woman's Auxiliary. The past decade has witnessed the expansion of medicine far beyond the giving of drugs and of surgery. Its broader opportunities and obligations in social, economic, and educational matters in which good health is a dominant factor are apparent as never before. Into these your work is fitting so splendidly.

On behalf of the Medical Society of Virginia, I take this opportunity as the New Year dawns, to congratulate you and to wish you even greater success.

With the foregoing expressions of confidence in the Auxiliary, we must not fail, so let us rally to the call and make this the best year we have ever had.

Mrs. Southgate Leigh,

Norfolk, Va., president of the Woman's Auxiliary to the Medical Society of Virginia, recently returned from Chicago, where she attended a meeting of the executive board of the Woman's Auxiliary to the American Medical Association.

Mrs. Leigh is chairman of the program committee. She announces the program planned for the national auxiliary meeting, which will be held June 11-16, in Minneapolis, Minn.

The principal speaker, it is expected, will be Dr. Vincent, of the Rockefeller Institute, New York. Others will be Dr. Jabez Jackson, of Kansas City, and Dr. W. S. Thayer, of Baltimore, the two American Medical presidents. The newly appointed advisory council for the auxiliary, comprising Dr. Edward Heckel, of Pittsburgh; Dr. J. H. Walsh, Chicago; Dr. A. R. Mitchell, Lincoln, Neb.; Dr. J. H. J. Upham, Columbus, Ohio; Dr. Olin West, Chicago, and Dr. Morris Fishbein, Chicago, will be introduced for the first time, and will speak.

The Woman's Auxiliary to the Richmond Academy of Medicine

Has elected the following officers for the present year: President, Mrs. Stuart Michaux; vice-presidents, Mrs. E. G. Hill and Mrs. Joseph Bear; secretary, Mrs. N. T. Ennett, and treasurer, Mrs. J. W. Hannabass. Mrs. W. A. Gills is chairman for "*Hygeia*" and Mrs. J. K. Hall chairman of the Legislative Committee.

At the luncheon of the Welfare Committee of the Woman's Club, Richmond, in January, the Auxiliary secured Dr. R. K. Flannagan, of the State Board of Health and Dr. W. B. Foster, of the City Bureau of Health, as the speakers. Both of these doctors spoke on public health subjects.

The Auxiliary held its annual tea on February the 1st. This was a most enjoyable entertainment and largely attended. Quite a large delegation from the Auxiliary to the Post-Graduate Medical Society of Southern Virginia was present. This intermingling of the members of two auxiliaries was especially gratifying and added greatly to the interest of the occasion.

The Woman's Auxiliary to the Post-Graduate Medical Society of Southern Virginia

Held its regular quarterly luncheon meeting in Petersburg, on February the 1st, under

the able leadership of Mrs. E. J. Nixon, of that city. Twenty-eight members were in attendance. Guests of the Auxiliary on this occasion were Drs. Wm. F. Drewry and E. L. McGill, of Petersburg, and Miss Agnes Edwards, secretary of the Medical Society of Virginia. Following the meeting, twenty-two of the ladies motored to Richmond to attend the tea given by the Woman's Auxiliary to the Richmond Academy of Medicine.

Officers of the Auxiliary are: President, Mrs. E. J. Nixon, Petersburg; vice-presidents, Mrs. T. F. Jarratt, Jarratt, and Mrs. J. N. Elder, Hopewell; recording secretary, Mrs. George H. Reese, Petersburg; corresponding secretary, Mrs. Bolling J. Atkinson, Emporia; treasurer, Mrs. R. T. Hawks, Carson.

At the last meeting of the State Society, Mrs. F. J. Wright, Petersburg, was elected State Organizer, and Mrs. W. C. Powell, also of Petersburg, assistant State Organizer. County chairmen to work with them are Mrs. D. L. Elder, Hopewell; Mrs. D. C. Mayes, Church Road; Mrs. C. C. Tucker, Blackstone; Mrs. W. E. Price, Meredithville; Mrs. E. M. Parker, Emporia; Mrs. W. D. Prince, Stony Creek, and Mrs. W. M. Seward, Surry.

Chairmen of Standing Committees are: Hygeia, Mrs. Meade Edmunds, Petersburg; Legislative, Mrs. J. Bolling Jones, Petersburg; Education and Publicity, Mrs. Wright Clarkson, Petersburg; Organization, Mrs. J. A. B. Lowry, Crewe.

The Truth About Medicine

In addition to the articles enumerated in our letter of November 26th, the following have been accepted:

Winthrop Chemical Co., Inc.,
Phanodorn.

Change of Agency:

Gynergen, formerly distributed by H. A. Metz Laboratories, Inc., New York, is now distributed by Sandoz Chemical Works, Inc., New York. The Council has continued the acceptance of Gynergen under the new distributor.

NEW AND NON-OFFICIAL REMEDIES

Anaerobic Antitoxin.—An antitoxic serum prepared by immunizing animals against the anaerobic bacteria found in gangrenous wounds. Evidence has been published to indicate that the use of anaerobic toxin preparations may be of value in the treatment of gas gangrene.

Anaerobic Antitoxin (Polyvalent)—Lederle.—An antitoxic serum prepared by immunizing horses with gradually increasing doses of B. tetani and of B. welchii and Vibrion septique, both obtained from anaerobic broth cultures of the organisms. Potency tests for the content of tetanus antitoxin and B. welchii (perfringens), antitoxin are made according to the methods prescribed by the U. S. Hygienic Laboratory; for determining the strength of the Vibrion septique antitoxin, serial dilutions of the antitoxin are mixed with Vibrion septique toxin and the mixtures injected into rabbits. The product is marketed in 100 c.c. vials, each cubic centimeter containing 50 units of tetanus antitoxin, 2 units of perfringens (B. welchii) antitoxin, and sufficient Vibrion septique antitoxin to neutralize one thousand M. L. D. of the Vibrion septique toxin. Lederle Antitoxin Laboratories, New York.

Ampuls Dextrose (d-Glucose), 10 Gm., 20 c.c.—Each ampule contains Dextrose, U. S. P., 10 Gm.; cresol, 0.1 per cent; distilled water to make 20 c.c.; buffered with dibasic sodium phosphate anhydrous and potassium biphosphate anhydrous. H. K. Mulford Co., Philadelphia.

Ampuls Dextrose (d-Glucose), 25 Gm., 50 c.c.—Each ampule contains Dextrose, U. S. P., 25 Gm.; cresol, 0.1 per cent; distilled water to make 50 c.c.; buffered with dibasic sodium phosphate anhydrous and potassium biphosphate anhydrous. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., December 10, 1927, p. 2041).

Insulin—Squibb, 100 units, 10 c.c.—Each c.c. contains 100 units of insulin—Squibb (New and Non-official Remedies, 1927, p. 197). E. R. Squibb & Sons, New York.

Staphylococcus Mixed Bacterin.—A staphylococcus vaccine (New and Non-official Remedies, 1927, p. 363), each c.c. containing 4,000 million killed *Staphylococcus albus* and *Staphylococcus aureus* in equal proportions. It is marketed in 5 c.c. vial packages; in single 20 c.c. vial packages, and in packages of six 1 c.c. ampules. Abbott Laboratories, North Chicago, Ill.

Erythrol Tetranitrate Tablets—Merck, ¼ grain.—Each tablet contains ¼ grain of erythrol tetranitrate (New and Non-official Remedies, 1927, p. 267). Merck & Co., Inc., Rahway, N. J. (Jour. A. M. A., December 24, 1927, p. 2193).

Typhoid Prophylactic.—This typhoid vaccine (New and Non-official Remedies, 1927, p. 366), is also marketed in 5 c.c. vials containing one billion killed typhoid bacilli per c.c.; in 20 c.c. vials containing one billion killed typhoid bacilli per c.c. Abbott Laboratories, North Chicago, Ill. (Jour. A. M. A., December 31, 1927, p. 2263).

PROPAGANDA FOR REFORM.

The Mount Clemens Baths.—The Mount Clemens mineral springs are unusually strong solutions of salines, giving off the pungent odor of hydrogen sulphide. They are not thermal springs; the water is heated in bath houses. Patients with chronic rheumatic, neuritic and neuralgic disturbances are especially likely to be benefited by such baths. The use of hot procedures is dangerous in all conditions of profound general weakness, enfeeblement of the heart and degeneration of the arteries. Patients with a tendency to rise in temperature should also not be subjected to heat procedures. Medical supervision is absolutely required to secure good results. What folly it is for people to go to Mount Clemens

and other bathing resorts, jump into hot mineral baths and drink a lot of strong saline water, trusting to Providence to take care of the rest! (Jour. A. M. A., November 5, 1927, p. 1625).

Scarlet Fever Antitoxin.—The advantages of giving commercial scarlet fever antitoxin are necessarily dependent on the accuracy of standardization of the preparation and its use in adequate dosage. The chief advantage of giving commercial scarlet fever antitoxin as a preventive is that the administration of 100,000 neutralizing units prevents the development of clinical scarlet fever in a susceptible person already infected with scarlet fever streptococci but not yet sick. This protection is transient and, as soon as the antitoxin is eliminated from the body, the individual may again become susceptible to scarlet fever and should be more permanently protected by active immunization with graduated doses of the toxin. The advantages of giving scarlet fever antitoxin are: 1. If an adequate dose is given, the toxin in the patient's body is neutralized and death from toxemia is prevented. 2. If the antitoxin is given early, both the incidence and the severity of complications are reduced. 3. As a rule, patients who receive scarlet fever antitoxin early in the disease get rid of the scarlet fever streptococci sooner than those who do not receive the antitoxin. (Jour. A. M. A., November 5, 1927, p. 1625).

Klaiber Subaqueous Intestinal Bath Apparatus Not Acceptable.—The Council on Physical Therapy reports that this apparatus is not acceptable for inclusion in the accepted list of devices for physical therapy. It is stated to be a device for irrigating the colon while the patient is immersed in water with the aim thereby of increasing abdominal pressure to compensate in part for the increased pressure within the colon. The Council reports that the apparatus is apparently made for specific purposes and the principle of operation is novel and suggests therapeutic advantages. The Council declares the apparatus unacceptable because (1) sufficient evidence has not been presented to show that this complicated apparatus will accomplish more than simple existing devices of the same general nature; (2) because therapeutic claims not well warranted and unscientific statements are made in the advertising; and (3) because adequate instruction in the proper use of the apparatus and method and adequate exposition of the possible dangers and limitations are not given. (Jour. A. M. A., November 12, 1927, p. 1693).

Solution of Pituitary for Induction of Labor.—The application of solution of pituitary to the nasal mucous membrane as a means of induction of labor has been reported on. Under direct vision with reflected light and the use of a speculum, the nose is cleansed and a pledget of cotton, moistened with 1.25 c.c. of solution of pituitary, is inserted snugly under the anterior end of the inferior turbinate of the nostril. At the end of an hour or two the pledget is withdrawn. If necessary, a fresh pledget is applied to the other nostril. The procedure is reported to have been successful in every one of fifty-six cases in which it was used. In a series of twenty-four cases to test the method in normal pregnant women during the last month of pregnancy and at term, there were nine failures. All the babies were born alive. (Jour. A. M. A., November 12, 1927, p. 1696).

Warnink's Advocaat Not Acceptable for N. N. R.—"Warnink's Advocaat" (Julius Wile, Sons & Co., New York, distributors), is an egg nog declared to be imported from Holland and to contain 18 per cent of alcohol in the form of brandy and three minims of Fowler's solution to each fluid ounce. The Council declared the preparation unacceptable for New and Non-official Remedies, because the name is not descriptive of the potent constituents—potassium arsenite and alcohol—of the mixture and because the administration of an alcoholic "tonic" in combination with fixed amounts of arsenic and under a non-informing name is irrational, while the method of marketing is likely to lead to its ill advised and harmful use by the public. (Jour. A. M. A., November 12, 1927, p. 1711).

Philip Newton's Matamel.—"Matamel" has for two or three years past been exploited by one Philip Newton. It is claimed to be—and probably is—the concentrated sap of the maguey plant. According to the advertising put out by Newton, both under his own name and under his trade name "Newton Laboratories, Inc.," Matamel has been puffed as a cure for Bright's disease, "bladder trouble" and hypertrophy of the prostate. In September, 1926, the Newton Laboratories, Inc., as well as Philip Newton himself, were called on by the postal authorities to show cause why a fraud order should not be issued against them. To the disgrace of the medical profession, Newton was able to produce a dozen or more testimonials from physicians in defense of his quackery. Obviously realizing that sooner or later the mails would be closed to him, Newton has determined to discontinue the mail-order business. This does not mean that the public is no longer to be humbugged by the Matamel quackery. It means that Newton has to split his profits with the drug stores and will sell it through them. (Jour. A. M. A., November 12, 1927, p. 1712).

Book Announcements

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Medicine, Surgery and the Various Specialties, by leading members of the Medical Profession throughout the world. Edited by by HENRY W. CATTELL, M. D., Philadelphia, with COLLABORATORS. Volume IV. Thirty-seventh Series, 1927. Philadelphia and London. J. B. Lippincott Company. 1927. 8 vo. 309 pages. Cloth.

Physical Diagnosis. By CHARLES PHILLIPS EMERSON, M. D., Professor of Medicine, Indiana University School of Medicine; Author of "Clinical Diagnosis." Philadelphia and London. J. B. Lippincott Company. Octavo of 553 pages with 324 illustrations. Cloth. Price, $7.00.

Baby's Health Day by Day. A book of charts to be filled out with daily records, and handy information for the mother or nurse. Published by the Professional Press, Inc., 17 North Wabash Avenue, Chicago, Ill. Pocket size.

Modern Baking Powder an Effective, Healthful Leavening Agent. Including the occurrence of aluminum compounds in foods and their effect on health. Compiled by JUANITA E. DARRAH. Distributed by the Research Department of Calumet Baking Powder Company, Chicago, Illinois. 1927. The Commonwealth Press, Inc., Chicago, Ill. 12mo of 125 pages. Cloth. Price, $1.00 net.

Virginia Medical Monthly

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All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

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Editorial

Ephedrine.

Clinicians are divided on this drug. Some have been disappointed in it; others have been encouraged by successes. Any study of its action, controlled by careful methods of study, is welcome, because a judgment of the powers of the drug can only be attained by the sum of experiences recorded by a large number of observers.

Those interested may read with profit, an article by Althauser and Schumacher (*Arch. Int. Med.*, Vol. 40, No. 6, page 857), and we append comments by these authors, found at the close of their study:

1. Ephedrine may be of benefit in some cases of chronic hypotension.

2. The results of ephedrine therapy in acute hypotension of shock are doubtful.

3. In asthma and hayfever ephedrine is of great value, completely controlling attacks in about half of the cases and giving partial relief in another one-fourth of the cases.

4. The advantage of ephedrine over epinephrine is that it is effective when given by the mouth; that its action is longer; that it does not produce local irritation as a nasal spray.

5. The use of ephedrine in urticaria is not promising.

Changes in the Eyegrounds.

Practitioners may well be interested in observations made upon changes in the eyegrounds. Particularly may one's interest be engaged in noting the findings of a clinician examining one hundred and eighty-seven cases of vascular disease and related conditions. Text-book treatments of eyeground findings are easily found by reference to standard treatises, but the observations of a group of cases, such as reported by Altnow, in the *Archives of Internal Medicine*, Vol. 40, No. 6, page 757, afford one a better opportunity for practical consideration of this means of investigation. The patients studied were admitted to Peter Bent Brigham Hospital from February, 1924, to July, 1925. The diagnosis on patients resulted in the following group of diseases: Exophthalmic goiter, toxic adenoma of the thyroid, diabetes, acute and subacute nephritis, chronic nephritis, vascular hypertension, chronic myocarditis with and without arrhythimia, cardiac infarction, angina pectoris, and chronic cardiac valvular disease. The eyegrounds in these patients were studied with the dilated pupil and, at the same time, the blood pressure readings were taken. We shall only note here the summary of this interesting clinical study.

In twenty patients with thyroid disease, there was a striking absence of retinal arteriosclerosis, excepting in patients of the sixth decade.

In forty-seven patients with diabetes, of all ages over twelve years, there was definite retinal arteriosclerosis in 36.1 per cent of the cases without hypertension and in 81.8 per cent of these cases with hypertension. The average age of diabetes patients with retinal arteriosclerosis was 57.7 years. Altnow observes that if one sees eyegrounds exhibiting abnormally red retinas, numerous small round hemorrhages, groups of small yellowish-white and grayish-white spots on the central field of the retina, arteries with sclerotic changes, a well defined sclerosis of the choroidal vessel in the periphery of the retinal field with normal or nearly normal disc, in a person past middle life, diabetes should strongly be suspected.

In a small number of patients with acute and subacute nephritis there was an absence of retinitis; in patients with chronic nephritis, retinitis was found more frequently than in those with vascular hypertension. In renal retinitis there was observed marked papilledema, retinal edema, cottonwood spots, and coarse fan and star formations. In fifty-six patients with and without hypertension, in

whom chronic myocarditis was either primary or secondary, 91.2 per cent with hypertension showed retinal arteriosclerosis, while 68.2 per cent showed it in absence of hypertension.

In chronic valvular disease, following rheumatic origin, retinal arteriosclerosis was absent in two-thirds of the cases. If retinal arteriosclerosis was present in this class of cases, it occurred in association with an elevation of blood pressure.

Absorption.

Absorption of food in the gastro-intestinal tract is fundamental. Passage of food products, introduced into the digestive tube, to the circulating blood and lymph, involves complicated physiologic changes. Gross foodstuffs undergo phenomenal changes in the processes of digestion and absorption. If one may imagine the extreme modification of the average meal as it is served on the table to the state such food units assume in the portal blood and the lymph, one is struck by the transformations brought about by the processes of digestion and absorption. Food furnishes an interesting and important subject for comment, because of the needs of its absorption by the blood and lymph.

Absorption of foodstuff in the stomach is limited and abridged. Although the stomach receives in a short time a load of food during the course of a meal, absorption of food from this organ is negligible under normal conditions.

The motor function of the stomach upon crude food prepares the meal for intestinal action. The action of the secretions of gastric glands upon the food during its stop-over in the stomach, further prepares it for intestinal digestion. Physiologists of today agree that absorption in the stomach is very limited. Alcohol is absorbed, but water is practically not at all absorbed in the stomach. Von Mering's experiments show that as soon as water is introduced into the stomach, it proceeds promptly to pass into the duodenum. In the case of a large dog with a fistula in the duodenum, 500 c.c. of water were given by the mouth and in twenty-five minutes 450 c.c. passed into the fistulous opening. Howell observes that absorption does not take place rapidly in the stomach. The same is true of sugars and peptones. Under normal conditions little, if any, absorption of these food elements occurs in the stomach. Fats are not saponified or emulsified until intestinal secretions are met. The stomach plays an important part in preparation of food, but does not absorb it normally to any extent.

In the small intestines absorption of food is best accomplished. In the great reaches of the small intestine, from duodenum to ileocecal valve, the physiologic changes in gross forms of food occur and along its courses, absorption of digested food is accomplished. The remainder of it passes into the ascending colon, and here, with water rapidly absorbed, becomes more dense and assumes the physical form of fecal matter as it approaches the rectum.

An article by Hosôi, Alvarez and Mann, (*Arch. Int. Med.*, Vol. 41, No. 1, page 112), on intestinal absorption, with a view to a search for a low residue diet, may be of interest in this connection. In summary, this work seems to show that the best basis for a low residue diet is lean meat, to which may be added rice, hard boiled eggs, sugars (except lactose), and probably fruit juice, tea and coffee. The highest degree of absorption was obtained by giving small amounts of food.

News Notes

An Early Diagnosis Campaign to be Held by the Virginia Tuberculosis Association and its Local Branches.

For many years it has been known that to procrastinate with tuberculosis is to gamble with death, and that the hope of conquering this disease lies in the ability to act promptly. It is also well recognized that efficiency in discovering the disease is a large factor in preventing the spread of infection. In spite of the publicity given these facts, doctors still report that most cases of tuberculosis which come to them for their first examination are found to be in an advanced stage of the disease, and a recent census of patients at the sanatoria shows that only 16 per cent are diagnosed as early cases on entrance.

During March and April National and State tuberculosis associations will conduct an intensive publicity campaign to emphasize the importance of the early diagnosis of tuberculosis. The aims of the campaign will be first, to focus the attention of the public at large upon the danger signals of early tuberculosis

and to urge them to go to their doctors for examination; and second, to stimulate renewed interest on the part of the medical profession in the recognition of early signs of the disease.

The American Public Health Association, at its annual meeting held in Cincinnati, October, 1927, endorsed by resolution the plan of the campaign. The American Medical Association has agreed to stimulate the interest of the medical profession through its Journal and to interest the lay people by publishing articles and editorials in Hygeia.

State and local associations in Virginia will arrange for talks, the distribution of literature and posters, and two moving pictures will be shown. The moving picture for lay audiences entitled "Let Your Doctor Decide" will be shown throughout the state at public meetings and a medical one, pronounced "admirable" by Dr. Haven Emerson, called "The Doctor Decides" will be shown before medical societies and at the medical colleges of the State.

L. C. F.

Sectional Meeting of American College of Surgeons.

The Virginia, West Virginia, Maryland and District of Columbia sectional meeting of the American College of Surgeons was held in Roanoke, Va., January the 18th and 19th, and an excellent program was enjoyed by those present. The attendance was good and there were a number of interesting papers and clinics.

Luncheon was served the visitors at the various hospitals of the city on both days, and on the evening of the 18th, the Roanoke Academy of Medicine tendered the fellows of the College and all visiting doctors an informal dinner at the Patrick Henry Hotel.

Officers of the Virginia section elected for the ensuing year are: Chairman, Dr. Clarence Porter Jones, Newport News; Secretary, Dr. Carrington Williams, Richmond; and Councillor, Dr. E. C. S. Taliaferro, Norfolk.

Corner-Stone Laid for Cabaniss Hall.

The corner-stone for Cabaniss Hall of the Medical College of Virginia, Richmond, was laid January the 20th, with appropriate ceremonies. This building is a women's dormitory, chiefly for the school of nursing, at the Medical College of Virginia, and has been named for Sadie Heath Cabaniss, who from 1894-1901 was superintendent of the Old Dominion Hospital, one of the institutions of the college. (A sketch of Miss Cabaniss appears in the *Miscellaneous Department* of this issue).

Cabaniss Hall, which will accommodate 134 persons, one-half in single and one-half in double rooms, has four dormitory floors, on each of which there is a sun porch; there are both tub and shower baths, hot and cold water and built-in clothes closets in each room, and on each floor in the east wing of the building living quarters for the graduate staff of the college hospitals have been provided.

On the main floor there is a large living room and library panelled in oak with a fireplace, four reception rooms, a large recreational hall, administrative offices, a teaching unit, and living quarters for the dean of the school of nursing and the social director of the building.

On the ground floor there is a large dining-room, a smaller staff dining-room, pantry, dishwashing and cafeteria units, linen and sewing-rooms, a home economics laboratory, and a small laundry and a sewing-room for student use. By tunnel this floor communicates with the Dooley and St. Philip Hospitals and will communicate with the new outpatient clinic by another tunnel when that is erected.

Dr. J. H. Hiden Wins First Prize.

Three prizes were recently offered through *Southern Medicine and Surgery* of Charlotte, N. C., for the three best papers submitted on the subject, "How the Family Doctor Can Increase His Usefulness and His Income." The contest was open to any reputable, regular doctor in either of the Carolinas or Virginia. It is stated that forty-two essays were submitted and that they came from both cities and "the cross-roads." All essays contained valuable suggestions, but Dr. J. H. Hiden, Pungoteague, Va., was voted the winner of the first prize of $250. It was voted by the committee that Dr. W. M. Johnson, Winston-Salem, N. C., and Dr. H. J. Langston, Danville, Va., tied for the second place, so the second and third prizes were added together and divided equally between these two doctors. All of these essays appear in the January issue of *Southern Medicine and Surgery*.

Members of Hospital Committee.

The president of the Chamber of Commerce, of Petersburg, Va., appointed the following

committee to have charge of work incident to enlargement of the Petersburg Hospital: Dr. Wright Clarkson, chairman, and Drs. W. P. Hoy, Herbert C. Jones, W. B. McIlwaine, W. C. Powell, George Reese, Mason Romaine, H. M. Snead, and several laymen.

Abbott Laboratories Takes Over John T. Milliken and Company.

The Abbott Laboratories, North Chicago, Ill., announces the purchase of the business, good will, equipment and products of John T. Milliken and Company, of St. Louis, manufacturers since 1894 of reliable pharmaceutical products. Orders for Milliken preparations will continue to be filled from St. Louis, or orders may be sent direct to the Abbott Laboratories, in North Chicago.

Dr. James M. Miller Injured.

Dr. James M. Miller, of Wytheville, Va., was quite badly hurt on January the 29th, when his automobile was struck by a train a little west of that city. He was taken to the Johnston Memorial Clinic in Abingdon, Va., for treatment. It is reported that Dr. Miller sustained a fracture of the skull and a fracture of the right scapula and multiple severe lacerations of the scalp and face. As we go to press, we are advised that he is doing remarkably well in view of the nature of the wounds.

New Hospital to Replace Present Hygeia Hospital.

Hygeia Hospital, Richmond, Va., of which Dr. John R. Blair has been chief surgeon, was closed early this month, the idea being to build a new hospital to replace the present structure. It is stated that a corporation has been formed which plans to erect an eleven-story hospital on the present site and that the new hospital will cost upwards of $300,000.

Dr. E. W. Buckingham,

Of the class of '18, Medical College of Virginia, who returned from China last summer after a residence there of six years, has located at Messick, York County, Va., for the practice of his profession.

Dr. Charles B. Baughman,

Recently of Marion, Va., has moved to Elizabethton, Tenn., where he will limit his practice to diseases of the eye, ear, nose and throat.

Dr. John Lee Grant,

For some time of Midland, Va., after a visit to California and Manila, has returned to Virginia and has located at Gainesboro, where he is engaged in the practice of his profession.

Col. Junius F. Lynch, M. C.,

Norfolk, Va., president of the Virginia Section of the Reserve Officers' Association, was the guest of honor at the dinner meeting of the Richmond Chapter, Reserve Officers' Association, on January the 25th.

Fewer Boy Automobile Thieves in Los Angeles.

The records of the Los Angeles County jail indicate that between 1919 and 1926 the average age of its inmates decreased from about 31 years to 29 years 10 months, and that nearly a fifth of the inmates were between the ages of 16 and 20. The most frequent offence was the setaling of automobiles, and fully half of these thefts were by boys under 21. An educational campaign among young persons and their parents has already resulted in a notable decline in this type of offence.

Sixty Years a Mason.

Thompson Lodge, No. 145, A. F. & A. M., at Round Hill, Va., has the rare distinction of having a worshipful master who has been a Mason for sixty years—Dr. J. E. Copeland, of that place. During this time he has been active in the work of the several lodges with which he has been affiliated. Dr. Copeland reports that of the forty-six members of Hamilton Lodge when he was made a Mason, but two survive, one of these being Dr. Charles F. Russell, of Herndon.

Dr. Gladys Smithwick,

Who has recently been connected with the staff of the Western State Hospital, at Staunton, Va., has gone to Chicago, Ill., where she has accepted an appointment as anesthetist-in-chief at the American Hospital. Dr. Smithwick is an alumna of the Medical College of Virginia, being a member of the class of '25.

Dr. Ernest H. Alderman,

Recently of Williamsburg, Va., has moved to Richmond, where he has become a member of the staff at Westbrook Sanatorium.

Dr. T. Ruffin Pratt,

Who was a member of the medical staff at Blue Ridge Sanatorium, Charlottesville, Va., from 1924 until last April, is now superintendent of the Eastern Shore Tuberculosis Sanatorium, at Salisbury, Md.—a branch of the Maryland Tuberculosis Sanatorium.

Research Work Commended.

It is pleasing to note that research work

done by one of our members, Dr. H. J. Warthen, Jr., while at St. Elizabeth Hospital, Richmond, has been commented upon favorably in an editorial entitled "Foreign Bodies in the Circulation," in the January 14th issue of the *Journal of the American Medical Association.*

Dr. T. M. Trousdale,

Who has been associated with Dr. W. R. Williams, at Richlands, Va., for the past seventeen months, is now assistant resident physician on the eye, ear, nose and throat service at the Long Island College Hospital, Brooklyn, New York.

Dr. W. F. Mitchell.

Of the class of '26, Medical College of Virginia, recently completed an internship at Lewis-Gale Hospital, Roanoke, Va., and has located at New Castle, Va., for the practice of his profession.

"Mothers' Aid" Granted by Institutions.

Four institutions conducted under church auspices in North and South Carolina, finding that some children for whom institutional care was requested could be cared for in their own homes if the mothers had the necessary means to support them, are now giving "mothers' aid" in such cases. South Carolina is one of the six States which at present has no law granting aid to children in their own homes.

The Association of Norfolk and Western Railway Surgeons,

At its annual meeting in the Fall, elected the following officers for the coming year: President, Dr. D. A. Berndt, Portsmouth, Ohio; Vice-Presidents, Dr. W. R. Rogers, Bristol, Va.-Tenn., and Dr. S. W. Hurdle, Winston-Salem, N. C.; member of the Executive Committee, Dr. A. G. Rutherford, Welch, W. Va. Dr. T. D. Armistead, Roanoke, Va., was re-elected secretary-treasurer of the Association.

Dr. W. C. Welburn,

Ballston, Va., has been elected first vice-president of the John Marshall Highway Association. The purpose of this Association will be to aid in the building of the Arlington county unit, known as the direct route from the new memorial bridge through Clarendon, Ballston and Falls Church.

Dr. J. M. Habel,

Of Jetersville, Va., is credited with saving the lives of four people in a fire recently. When passing a home in his section, while the owner and his wife were at church, he saw that the house was on fire and rushed in and rescued an aged aunt and three small children of the family.

Students' Loan Fund Working Well in California.

According to the *Journal of the A. M. A.*, during the six years in which the students' loan fund has been in operation at the University of California, Los Angeles, there has been only one failure to return the money, although the student's note was the only security given. This fund was arranged as a means of enabling deserving students to finance their expenses so as to complete the University course.

Co-operation in Work for Boys and Girls in New York City

Twenty-five of the 88 social agencies caring for New York City's dependent children have organized as a section of the Welfare Council of New York, in order to co-ordinate their activities and eliminate needless duplication of work. All existing agencies will be invited to send delegates to the council.

The Welfare Council is now making a study of boys' work activities in Brooklyn, preliminary to a similar study for New York City as a whole. When completed it is intended that this study shall present an accurate picture of facilities for social work among New York's half-million boys.

"The Hebrew Physician,"

(HaRofeh HoIvree), the only medical journal published outside of Palestine which is written in Hebrew, has just made its initial appearance.

This journal is under the editorship of Dr. Moses Einhorn and Dr. A. Goldenstein. It contains articles on general medical subjects and has a special section devoted to new Hebrew medical terminology. All physicians who are interested in this journal are requested to communicate with the editors, addressing them care "The Hebrew Physician," 286 West 86th St., New York City.

The Tri-State Medical Association of the Carolinas and Virginia

Will hold its thirtieth annual session at Cavalier Hotel, Virginia Beach, Va., February the 14th and 15th, under the presidency of Dr. Robert Wilson, of Charleston, S. C. Dr. J. M. Northington, Charlotte, N. C., is

secretary. There will be a symposium on "The Reduction of Maternal Mortality." In addition to this, many interesting papers will be presented.

Dr. Susan A. Price,

For several years past located at Williamsburg, Va., announces that she is now at State Teachers College, Farmville, Va.

Opposes Too Great Speed in School Work.

Dr. Garry Cleveland Myers, of the Western Reserve University, in the last issue of *Mental Hygiene*, condemns what he calls "stop watch" methods in the promotion of educational efficiency in the schools, as detrimental to the mental health of the child. He states that this mania for speed also reacts on the teacher and makes her nervous. He gives a number of suggestions as specific remedies for the situation, emphasizing the fact "that the most effective learning presupposes a comfortable learner."

Two Virginia Doctors on Committees.

At the recent meeting in Indianapolis of the national executive committee of the American Legion, Dr. Edwin J. Nixon, Petersburg, was elected a member of the national child welfare committee of the Legion, and Dr. Israel Brown, Norfolk, Department Commander of Virginia, a member of the committee to welcome distinguished guests.

Fund for the Study of Infantile Paralysis.

An anonymous friend of the University of California has promised $5,000 a year during his life and a fund of $100,000 by his will to be devoted to the prevention and cure of infantile paralysis. The fund, however, may be diverted to combat any serious epidemic which threatens the lives of the children of the State.

Married.

Dr. William White Falkener and Miss Eva Cruikshank, both of Newport News, Va., December 31.

Dr. Andrew Stubbs Davis, class of '26, Medical College of Virginia, Oakland, Calif., and Miss Irene Louise Leonard, Chincoteague, Va., at Reno, Nevada, December 29.

Dr. Edward L. Boone,

Of the class of '26, Medical College of Virginia, who has been practicing for a while at Branchville, Va., has moved to Scottsburg, Va.

Georgia Now in Birth and Death Registration Areas.

Georgia has been admitted to the birth and death registration areas of the United States. This has reduced to five the number of states outside the death registration area, and to seven the number outside the birth registration area.

Superintendent at Gill Memorial Hospital.

Miss Crystall J. Caldwell, formerly assistant superintendent of the Children's Hospital, in Philadelphia, is now superintendent of the Gill Memorial Eye, Ear and Throat Hospital, in Roanoke, Va.

Enlarged Clinic at College.

The enlarged pediatric clinic, which has been made possible by the Commonwealth Fund of New York, in addition to local help, was opened at the Medical College of Virginia, Richmond, late in January. Dr. Basil B. Jones, well known for his work at the Children's Memorial Clinic, this city, is in charge. This clinic is designed not to supplant any existing agencies but solely to supplement work of a similar nature in this community.

Post-Graduate Course in Specialties.

The Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Va., announces its second Post-Graduate Course in Ophthalmology, Otology, Rhinology, Laryngology, Facio-Maxillary Surgery, Oral Surgery, Bronchoscopy and Esophagoscopy, to be held at that hospital on March the 19th to 24th. A number of specialists of national reputation have been secured to conduct this course. A matriculation fee of $25.00 is made to defray the actual expenses of conducting this course. Applications should be sent the Hospital promptly.

Just a Reminder—

Of that Income Tax which has to be attended to on or before March the 15th. Failure to receive a blank does not excuse any one from making a return. Certain deductions are allowed for professional expenses. If not familiar with the rulings, make inquiry of your district collector of internal revenue.

Conference on Rheumatic Diseases.

A Conference on Rheumatic Diseases is to be held at Bath, England, on Thursday and Friday, May 10 and 11, 1928. Sir George Newman, Chief Medical Officer of the British Ministry of Health, has kindly consented to act as President of the Conference. There will be three Sessions: (1) Social Aspects, presided over by Lord Dawson, of Penn, Physician to H. M. King George; (2) Causation, presided over by Sir Humphry Rolleston

(Regius Professor of Physic, University of Cambridge), and (3) Treatment presided over by Sir E. Farquhar Buzzard (Regius Professor of Medicine, University of Oxford). The local Hon. Medical Secretary is Dr. Vincent Coates, 10, Circus, Bath, England.

Virginia Doctors Read Papers in South Carolina.

Dr. M. Pierce Rucker and Dr. William H. Higgins, both of Richmond, Va., were among the invited guests to present papers before the Malboro County, S. C., Medical Society, at its meeting in Bennettsville, January the 12th.

Dr. Reid White,

Lexington, Va., has been appointed physician to Washington and Lee University, in that place, succeeding the late Dr. Robert Glasgow.

Tuberculosis Workers' Institute.

A two weeks' course for tuberculosis workers is being conducted in Richmond, at the School of Social Work and Public Health, under the auspices of the Virginia Tuberculosis Association and the College of William and Mary.

Dr. Philip P. Jacobs, one of the pioneers in the National Tuberculosis Association, is Director of this institute, which is one of four he will hold in 1928. One of the other institutes will be at St. Louis and two on the Pacific Coast.

Twenty students, representing Virginia, South Carolina, Maryland, Pennsylvania and New York, are enrolled for this course.

Urological Association of South Carolina.

The above named association was organized the latter part of 1927, at a meeting held in Columbia. Officers are Dr. Milton Weinberg, Sumter, president; Dr. W. B. Lyles, Spartanburg, vice-president, and Dr. Hugh E. Wyman, Columbia, secretary.

New Type of Open-Air School in Paris.

An open-air school has recently been established in a thickly populated district of Paris. On admission each pupil is given a physical examination by a physician and a Binet-Simon mentality test, and he is then assigned to the school work which the examinations indicate he is fit for, no matter what his chronological age may be. Promotion depends on the results of later examinations, which are given every three months. The school was established on the initiative of Professor Alfred Binet, one of the originators of the Binet-Simon mentality tests.

Dr. Preston to Speak in Danville.

Dr. J. W. Preston, Roanoke, president of the Medical Society of Virginia, will address the Pittsylvania County and Danville Medical Society at its regular quarterly meeting in Danville, March the 13th. Dr. L. E. Fuller, of Witt, is president, and Dr. J. A. Hawkins, Danville, secretary of the Society.

Dr. Thomas Boyd Washington,

Of the class of '24, Medical College of Virginia, has returned to his home in Richmond, Va., after taking a course in genito-urinary surgery at the New York Polyclinic. He will be associated with Dr. A. L. Herring.

Dr. Bittle C. Keister,

Formerly of this State, but more recently of Washington, D. C., has located at Harrisonburg, Va., for the practice of his profession.

Doctors as Bank Directors.

The following doctors' names have been noted as members of the boards of directors for a number of Virginia banks: Dr. W. C. Powell, Petersburg; Dr. J. H. Mapp, Buena Vista; Dr. H. A. Spitler, Middleburg; Dr. Otis Marshall, Culpeper; Dr. C. S. Dodd, Petersburg; Dr. J. M. Williams, Petersburg; Dr. Granville Eastham, Rapidan; Dr. W. W. Wilkinson, La Crosse; Dr. C. P. Hutchison, Purcellville; Dr. T. W. Hankins, Fordwick; Dr. Harry T. Hopewell, Strasburg; Dr. Lewis Holladay, Orange; Dr. E. L. Marshall, Big Island; Dr. E. W. Brown, Washington; Dr. James G. Brown, Woodville; Dr. E. W. Twyman, Twymans Mill; Dr. J. P. Hankins, Unionville.

The U. S. Civil Service Commission,

Washington, D. C., announces the following open competitive examinations:

Junior Medical Officer (Interne); Social Worker (Psychiatric) and Junior Social Worker; and Graduate Nurse, Graduate Nurse (Visiting Duty) and Graduate Nurse (Junior Grade), applications for all of these to be rated as received by the Commission until June 30;

Assistant Medical Officer, Associate Medical Officer, Medical Officer, and Senior Medical Officer, applications to be rated as received by the Commission until June 29; and

Physiotherapy Aide, and Physiotherapy Pupil Aide, applications for these to be on file with the Commission, not later than February 25, April 21 and June 23, 1928.

Dr. Robert F. Cline

Has returned to his home in Winchester, Va., after spending a year in Chicago, where he has been taking post-graduate work.

New Children's Hospital in Atlanta.

The plans for a new hospital for children under 12 at Atlanta, Ga., are nearing completion. It will accept all types of cases except contagious diseases. The first unit will have fifty beds, of which forty-two will be for patients unable to pay. The hospital is made possible through the gift of the late Thomas Egleston.

Dr. F. Musgrave Howell,

Who has been practicing in Lynchburg, Va., for some time, has moved to Hopewell, Va., and is located in City Point Court. He will contine the practice of his profession in that place.

An Invitation Has Been Issued

By the Medical Society of the District of Columbia to Virginia physicians visiting in Washington, D. C., to make their Society building at 1718 M Street, Northwest, headquarters while in that city. Here will be found a library containing current medical literature, daily lists of clinics held in the various hospitals and opportunities for making personal contacts with the local profession.

Dr. E. L. Caudill,

Recently of Narrows, Va., has moved to Elizabethton, Tenn., where he will be connected with the new hospital that is being built in that place and will be engaged in general practice and surgery.

Virginia Doctors Attend Meeting in Greenville, S. C.

Virginia doctors who attended the annual meeting of the Southern Section of the American Laryngological, Rhinological and Otological Society in Greenville, S. C., on January the 28th, are: Drs. J. A. White and Clifton M. Miller, of Richmond; Dr. Clarence Porter Jones, of Newport News; Dr. H. S. Hedges, Charlottesville, and Dr. J. R. Gorman, Lynchburg.

Prevalence of Venereal Diseases.

In his recent report to Congress Surgeon General Cumming, of the U. S. Public Health Service, called attention to the importance of scientific studies which the Service is conducting in an effort to develop more effective measures of prevention and treatment of the venereal diseases. During the last fiscal year, there were reported 196,000 cases of syphilis and 160,000 cases of gonorrhea. The number of Wassermann tests shows an increase of 25 per cent over the previous year. Over a period of many years, about 20 per cent of all patients treated by the Public Health Service in its Marine Hospitals have been ill as a result of the venereal diseases. State health departments show great variation in the efficiency of their work for venereal disease control. On the whole, the report states that facilities for treating indigent patients with venereal diseases are most inadequate in the small towns and rural districts of the various states.

Two Virginians Graduate From Army Medical School.

Lieutenants Jacob C. Harshbarger, of Port Republic, Va., and Marion W. Ransone, Hampton, Va., were among the forty-six officers who graduated from the Army Medical School, Washington, D. C., on January the 31st. Dr. Harshbarger graduated in medicine from the University of Virginia, Department of Medicine in 1926, and Dr. Ransone from the Medical College of Virginia, the same year.

International American Institute for the Protection of Childhood.

This institute, formally opened in Montevideo, June, 1927, in accordance with a plan adopted at the Fourth Pan-American Child Congress, held at Santiago, Chile, in 1924, is to serve as a center of information concerning child-welfare work on the American continent. Nine Latin-American countries have already joined it—Argentina, Bolivia, Brazil, Chile, Cuba, Ecuador, Peru, Uruguay, and Venezuela. The United States was represented at the opening ceremonies and on the governing council, but may not become an actual member until Congress authorizes such action.

Dr. R. Wilson Selby,

Recently of Middleburg, Va., has just moved to Dover, Pa., where he has bought the home and practice of Dr. Curtis J. Hamme. Dr. Hamme has gone to Edinburg, Texas, where he will be interested in growing citrus fruit and will probably continue the practice of medicine.

Dr. Cumming Re-appointed Surgeon-General.

Dr. Hugh S. Cumming, of Virginia, was recently re-nominated by the President to be surgeon-general of the U. S. Public Health Service. We understand that this nomination

was confirmed by the Senate without going to a Committee.

Dr. Randolph McCutcheon,

Of the class of '24, Medical College of Virginia, is now located at Taplin, W. Va.

The National Society for the Prevention of Blindness,

The new name just adopted by the former National Committee for the Prevention of Blindness, has issued a report which shows that their organization has grown from two men and one woman in 1907 to 25,000 members at the beginning of 1928. It now costs more than $100,000 a year to carry on the work of preventing blindness and conserving vision generally in the United States. Some of the other interesting statements in this report are that it costs on an average ten times as much to provide an education for a blind child as for one with normal sight; that the frequency of blindness from babies' sore eyes has been reduced by fifty per cent during the last twenty years; that other serious causes of blindness have developed in America, chief among these being the eye hazards of industrial occupations —eye accidents, eye diseases and eyestrain incidental to the daily work of millions of men and women. Of the 100,000 blind persons in the country, 15,000 are believed to have lost their sight in this way. Among the other serious causes of blindness are trachoma, the venereal diseases, and the accident hazards in public and home life. Mr. Lewis H. Carris the managing director of the Society, states that the organization is now directing its efforts against all of the above named causes of blindness as well as ophthalmia neonatorm and is devoting its resources to public education concerning general care of the eyes and conservation of vision, so as to reduce the proportion of our population handicapped by seriously defective vision.

Dr. Emmanuel U. Wallerstein,

Richmond, has just been elected a member of the board of governors of Jefferson Club, this city for a two-year term.

Drs. Peters and Handy Associated.

Drs. William B. Peters and Frank E. Handy, Appalachia, Va., announce the forming of a partnership for the practice of medicine and surgery. Their offices are in Peake Building on West Main Street, that place.

Heads Richmond T. B. Association.

Dr. Garnett Nelson, Richmond, has been re-elected president of the Richmond Tuberculosis Association for 1928.

Italy Decrees Compulsory Tuberculosis Insurance.

Compulsory insurance against tuberculosis has recently been decreed by the Italian Government for all manual workers, whose numbers are estimated at seven and a half millions. The cost, it is expected, will be 300,000,000 lire a year, this fund to be supplied by monthly contributions of 4 lire for each worker, paid in equal shares by the worker and his employer. Equipment of 20,000 beds is planned for the first ten years of the functioning of the decree.

Wanted—

By technician, extra laboratory work to do after 4 P. M. Thoroughly experienced in all routine examinations including Wassermanns. Willing to work on salary or commission basis. Address "No. 102, care VIRGINIA MEDICAL MONTHLY." (Adv.)

Wanted:

An experienced psychiatrist as assistant in Glenwood Park Sanitarium, Greensboro, N. C. Address W. C. Ashworth, M. D., owner, Greensboro, N. C. (Adv.)

Obituary

Dr. Isaac Curd,

Richmond, Va., died February 2nd, at his home in this city, aged 92 years. After graduating from Hampden-Sidney College, he studied medicine at and graduated from the Medical College of Virginia, Richmond. He served the Confederacy throughout the War Between the States. Several children survive him.

Dr. Benjamin Chapman Goodwin

Died at his home near Buckner, Va., January the 18th, in the 85th year of his age. He graduated from the Medical College of Virginia in 1865 and practiced for some time in Arkansas, returning to Virginia in 1894 and continuing the practice of his profession here. His wife and two daughters survive him.

Dr. Gregory Ackermann,

Wheeling, W. Va., died in that city on January the 16th, aged seventy-five years. He was one of the oldest members of the West Virginia State Medical Association and an honorary member of that society.